MEETING

CALIFORNIA AIR RESOURCES BOARD

SCIENTIFIC REVIEW PANEL ON TOXIC AIR CONTAMINANTS

1. SRP Consideration of the Air Resources Board (ARB)/Office of Environmental Health Hazard Assessment (OEHHA) December 1993 Report entitled "Benzo[a]pyrene as a Toxic Air Contaminant."

2. Discussion of Future Meeting Dates

REPORTER'S TRANSCRIPT OF PROCEEDINGS

Location:	Airporter Inn Hotel 18700 MacArthur Blvd. Irvine, CA 92715
Date and Time:	Tuesday, February 15, 1994 10:15 a.m. to 2:15 p.m.
Reported by:	JOANNE P. CUNNINGHAM, CSR No. 2734
Job No.:	24521JC

A P P E A R A N C E S

MEMBERS PRESENT:

DR. JAMES N. PITTS, JR.
DR. CHARLES BECKER
DR. STANTON GLANTZ
DR. GARY FRIEDMAN
DR. JOHN FROINES
DR. HANSPETER WITSCHI
DR. CRAIG BYUS
DR. JAMES N. SEIBER

ALSO PRESENT:

MS. GENEVIEVE A. SHIROMA, ARB
DR. JOAN E. DENTON, ARB
DR. GEORGE V. ALEXEEFF, OEHHA
DR. JAMES F. COLLINS, OEHHA
MR. BRUCE OULREY, ARB
MR. ALEX KRICHEVSKY, ARB
MS. PEGGY JENKINS, ARB

I N D E X

Irvine, CA Tuesday, February 15, 1994

P R O C E E D I N G S

DR. PITTS: Good morning. I'd like to welcome you here, the meeting of the Scientific Review Panel. On the agenda -- the No. 1 item on the agenda is the SRP consideration of the ARB/Office of the Environmental Health Hazard Assessment (OEHHA) report entitled "Benzo[a]pyrene as a Toxic Air Contaminant."

And we'll start right now with Genevieve Shiroma. But before I do, I want to point out that this is February 15th, which is the day after February 14th, and I want to express our appreciation to a key staff member who provided the members of our panel with appropriate nourishment to get us through this morning, which will be interesting, and the sentiments are appreciated by the -- all of us.

Okay. Genevieve.

MS. SHIROMA: Thank you, Dr. Pitts.

DR. PITTS: I will start my (indicating) . . .

MS. SHIROMA: Dr. Pitts, members of the panel, we have a short presentation for you today on the benzo[a]pyrene staff report. And I'm going to turn it

over to Joan Denton, who will introduce this item.

DR. DENTON: Thank you, Genevieve, and good morning, members of the panel. The way we're going to proceed this morning is that Alex Krichevsky, who is the lead person on the Part A portion of the document, will be giving a presentation, a short presentation on our conclusions for Part A, then both Alex and myself will be responding to comments. At that point we'll be open for questions or at any time during the proceedings, and then we'll turn it over to Jim Collins and OEHHA, to give the Part B portion of the report. So with that Alex Krichevsky, the lead person for Part A, will be summarizing the conclusions.

MR. KRICHEVSKY: Thank you, Joan.

Could you put on the slide projector.

(Slide presented.)

MR. KRICHEVSKY: Good morning, Dr. Pitts, Dr. Froines, and other members of the Scientific Review Panel. Today I will summarize the information we have gathered on exposure to benzo[a]pyrene in California.

(Slide presented.)

My presentation this morning will include a brief description of what is BaP, the public participation in the process, BaP's regulatory status, sources and emissions, atmospheric persistence, ambient

concentrations, near source exposure, indoor sources and concentrations, and a summary.

DR. FRIEDMAN: Excuse me for interrupting. Would it be possible to turn that screen a little bit so we can see it better.

(Discussion was held off the record.)

MR. KRICHEVSKY: Okay?

DR. FRIEDMAN: (Nods head.)

(Slide presented.)

What is benzo[a]pyrene? Benzo[a]pyrene is a five-ring polycyclic aromatic hydrocarbon PAH that is typically associated with small -- less than 3 microns combustion-generated respirable particles.

(Slide presented.)

Our request for information from the public was made in August 1988. In July 1989 we formally entered into our identification process. In July of 1993 the first draft of the report was released to the public for a 45-day comment period. On September 22nd, 1993, a public workshop was held with SRP member Dr. Froines in attendance. In December 1993 the SRP version of the report was released for public comment.

(Slide presented.)

This report was developed under the

provisions of the air toxics identification program and was to serve as the basis for the board consideration of identifying BaP as a toxic air contaminant. In April last year, as required by law, the board identified all federal hazardous air pollutants, or HAPs, as toxic air contaminants.

BaP is within the group of chemicals known as polycyclic organic matter, POM, which is listed as a HAP. Therefore, BaP was identified as a toxic air contaminant in April of last year.

The current version of this report is the basis for the Scientific Review Panel review of exposure, the cancer potency number for BaP, four expedited potency numbers, and potency equivalency factors for 20 other PAHs.

(Slide presented.)

BaP is a product of incomplete combustion and is emitted from both stationary and mobile sources. Stationary area sources include waste burning, such as agricultural, forest management, wildfires, and weed abatement. Stationary point sources include fuel combustion, incineration, and other industrial processes.

The estimated statewide total emissions of BaP is from 8 to 13 tons per year.

(Slide presented.)

Agricultural and other waste burning is the major source of BaP emissions. As you see on the slide, from 11,000 to 13,000 pounds per year are released into the atmosphere in California. It is 50 percent of the total statewide emissions of BaP. Fuel combustion contributes between 700 and 3800 pounds a year of BaP emissions.

Mobile sources emit from approximately 5,000 to 9,000 pounds per year or almost 35 percent of the total BaP emissions.

(Slide presented.)

Ambient BaP is typically absorbed onto fine particles. As a result, there are two dominant removal processes for BaP: Physical removal from the particles on which BaP resides, and atmospheric removal of the particles, and -- excuse me -- and atmospheric chemical reactions to the particle-absorbed BaP.

Based on available information, the lifetime of BaP ranges from a few hours in a polluted atmosphere to approximately ten days.

(Slide presented.)

BaP is routinely monitored by the ARB's statewide toxics monitoring network. Mean annual BaP concentrations ranged from a minimum of .11 nanograms

per cubic meter at Chula Vista to a maximum of 1.48 nanograms per cubic meter at Fresno.

The statewide population weighted exposure estimate is .53 nanograms per cubic meter. This is based on the 20 million people represented by the toxics monitoring network.

(Slide presented.)

The ARB staff analyzed archived PM 10 filters from two residential areas where wood and agricultural waste are burned. The analysis showed that the BaP concentrations during the winter months were at least ten times higher than the annual statewide population weighted exposure.

(Slide presented.)

Tobacco smoking raises indoor BaP concentrations by the greatest amount when compared to other indoor air sources. Results from two recent California studies showed average BaP concentrations up to about six times higher in homes with smokers than in outdoor air.

Wood burning in fireplaces and wood stoves can double the average BaP concentrations compared to homes without wood burning devices.

(Slide presented.)

I just gave you a brief description of BaP,

public participation in the process, and its regulatory status. I also briefly discussed its sources and emissions, atmospheric persistence, ambient, near source, and indoor concentrations.

In this comment period we have received several comment letters, and I would like to summarize the comments and our responses.

We received two letters during this comment period, one from Mr. John Roberts of Engineering Plus, Inc., and the other from the Western States Petroleum Association.

In the first letter, Mr. Roberts states that a discussion of accumulation of BaP in road dust and house dust should be added to Section IV F, "Exposure Through Other Routes." He feels this is particularly important for toddlers.

Our response: We agree with Mr. Roberts that BaP can accumulate in road and house dust.

Mr. Roberts sent us several of his recent publications which indicate that PAHs such as BaP can accumulate in road and house dust. We plan to add several sentences and references to Section IV F, per Mr. Roberts' request.

Second, Mr. Roberts recommends that the persistence of BaP in house dust be mentioned in Part A,

Section V B, "Atmospheric Fate of benzo[a]pyrene." He indicates that BaP and other PAHs can be protected in old carpets from degradation by sunlight, moisture, bacteria, rain, and wind, and persist for years in old carpets. This can lead to accumulation and present health risks to children.

Our response: We agree with Mr. Roberts that BaP can be protected in old carpets and persist for a long period of time, presenting an additional source of exposure.

We plan to add a paragraph in Section B of Chapter V which references Mr. Roberts' data and acknowledges the possibility of a much longer lifetime for BaP in house dust.

Finally, Mr. Roberts believes that the road dust is a major source of BaP emissions and should be mentioned in Section III C of the Part A.

Our response: We agree that road dust may be a source of emissions of BaP. However, we do not have any quantitative estimates for road dust as a source of BaP emissions.

MR. KRICHEVSKY: I will now turn the microphone over to Dr. Denton, who will provide the response to the WSPA letter.

DR. DENTON: Thank you, Alex.

Our second letter is a letter from the Western States Petroleum Association, and in the first paragraph of the letter, Jeff Sickenger of WSPA thanks us for a meeting on January 28, 1994.

At this point I want to give you some background on the meeting and the conclusions.

During our first comment period on the document last September, WSPA submitted a letter to us on September 28th, 1993, which we have included in Part C. In the letter WSPA questioned the new process for evaluation of hazardous air pollutants which were identified by the board as TACs last April.

And as you recall, the panel will approve the health values for these substances, and the board will be updated periodically on their status.

In the September letter, WSPA recommended that under the new process, formal board hearings be conducted on the health assessment values after they are approved by the SRP.

In our written response to their comment, which is also in Part C, we described the public participation process conducted for BaP and said further that in light of WSPA's concerns, we would meet with representatives of WSPA in early 1994 to discuss this.

Therefore, on January 28th, 1994, Peter

Venturini, Don Ames, Bill Lockett, Genevieve, and myself met with four representatives of WSPA. The WSPA representatives were Jeff Sickenger, Mike Wang, Russ White of Chevron, and Charles Lapin of Arco.

At the meeting WSPA clarified that they were concerned about how they could contribute earlier to the risk assessment process. Several ideas emerged including longer comment periods and earlier individual meetings with ARB and OEHHA staff.

WSPA understands that the ARB staff will from time to time inform the board on the progress for developing health values. The ARB staff also did not rule out the possibility that a specific hazardous air pollutant substance would be discussed before the board.

WSPA also had several health-related comments, but the OEHHA staff will respond to them during their presentation.

Finally, I'd also like to address the revisions that the panel has received both in the mail and in your packages today, just go over them briefly.

DR. FROINES: I'm confused, Joan, because I'm looking at that letter for the first time. Have you rejected the suggestion that there be formal hearings as to ARB meetings on the risk assessment?

DR. DENTON: No, we have not rejected it. We agreed with WSPA representatives that on a case-by-case basis that we would be looking at the individual substance in question and decide whether or not to take -- to take it before the board, and remembering that the health substances were formally identified in April as toxic air contaminants. So I mean that decision -- I mean, that regulation is already in effect, so these HAPs are toxic air contaminants.

But WSPA felt that on a case-by-case basis there may be substances that they would want a -- the board to hear and -- you know, in the board process. And so we agreed at that time to consider them on a case-by-case basis.

DR. FROINES: (Shakes head.) That's too upsetting. I can't comment on that.

DR. PITTS: I think there will be a pause because I want to hear your comments or Stan's comments. I think that's a very fundamental point.

MS. SHIROMA: Let me ask some clarification to this too. In that meeting with WSPA we indicated, and they realized this, that the board has always relied on this panel to review the science and technical soundness of our reports, and the board has never tried to say that they were the technical experts

or the scientific experts or to overrule the Scientific Review Panel. On perchlorethylene they sent us back into a workshop, because in terms of process we hadn't conducted our workshop. But they've always relied on this panel.

I think that we essentially made it clear to WSPA that it was not the board's role to be overruling this panel on a scientific basis, but we didn't want to shut the door saying that absolutely not, we would never take a substance before the board for a discussion. We told the board that --

DR. PITTS: Excuse me. Do you mean a scientific discussion? Are you -- I guess I want to clarify it in my own mind. Are you saying that yes, we'll review the whole thing and do the whole risk assessment side thing -- which is, by law, what we were supposed to do -- that is, the ARB -- and then was to come to the panel, and then go straight to the board. It would be public workshops for any scientific input that people wanted to bring up, public comments. We've gone through that whole thing. They exist.

But after the -- after the findings from this panel went to the board, then the board on occasion, at the request of WSPA or other groups, certainly WSPA, then could hold hearings which would involve the science

behind the risk assessments and perhaps a challenge to the findings that were generated through the ARB, OEHHA, and this panel? Am I understanding that that was what was involved here? Is that how it sounded to you, John and Stan?

DR. FROINES: (Nods head.)

DR. PITTS: And Stan?

DR. GLANTZ: (Nods head.)

DR. FROINES: It was bad when OMB did it, but when the interested parties come in, then it's really something else.

MS. SHIROMA: We did not commit to any discussions. Peter did not commit to -- to WSPA that should they ask the ARB for a hearing, that we would grant them a hearing. In fact, essentially it was left that ARB would determine from time to time whether the board would like an informational hearing on a particular substance. And that was essentially what was left. There was no further delineation, no discussion of criteria. It was simply that on a case-by-case basis, the ARB would determine whether a specific substance might be discussed before the board on an informational basis.

DR. GLANTZ: Well, now, I have a point of clarification, because my understanding of how the

process works -- I mean, we -- our findings go to the board, and the board is who takes the final action. And there is -- I mean, this was presented -- this is presented at a public meeting of the board, so how -- and people can get up and say things. I mean, people -- the ones that I've run into, people do get up and say things.

MS. SHIROMA: Then --

DR. GLANTZ: So how is what's being discussed different from the current process?

MS. SHIROMA: What's different here is that these are hazardous air pollutants which have already been identified by the board as toxic air contaminants, so they're already in the state regulations as -- labeled officially in a regulatory format as toxic air contaminants.

DR. GLANTZ: Right.

MS. SHIROMA: So these pollutants would ordinarily not go to the board -- would not go to the board for further regulatory action. Essentially now with this new process, as this panel signs off on the technical reports for the health values exposure, that's it. At that point that information then enters a public arena and can be used by the Air Resources Board or the districts or whoever else might have a need.

DR. FROINES: Are you saying we won't be presenting benzo[a]pyrene to the board?

MS. SHIROMA: That's right. That's right. This -- your action on this report will be the -- basically the last official action on the evaluation of the health effects, because it is already labelled as a toxic air contaminant in our regulations.

DR. FROINES: Well, that's even more worrisome, when you think about it, because what it means is that the one thing that happens, say, with perchlorethylene or methylene chloride or any of the others is that the lead person presents the findings, industry or public interest groups or whomever can get up and make any comments they choose, and some of them -- I remember on benzene, the industry got up and made very cogent scientific comments.

In this situation we are not going to present the findings, but it's -- that you could then -- but you could hold a hearing in which the interested parties make presentations to the board. I won't speak to that. That has more problems than are -- than -- but I think they're obvious.

The question is, What criteria would you use to say, "This chemical will take -- have a workshop for the board and this chemical won't"? My concern is that

it looks like one of these Malthusian curves that we see on a population where everything gets exponential at some point. And as far as I'm concerned, the politization of this process is approximately following that kind of exponential process, and that what concerns me is I think that what will happen is those who complain the loudest and who bring the most political pressure are going to be the ones where you're going to end up having hearings, and where there's not pressure brought, it won't happen.

And I think that that is really dangerous to this process. I don't think this panel can function within that context. I think it makes a mockery of all the science that we try and review, because it basically says "Once everything is done by the SRP, the apple's there for another bite," and I -- I don't think it's right. I just don't think it's right. I mean, we have to protect the science that we engage in. Otherwise, it's valueless.

DR. PITTS: Other comments from the panel?

DR. GLANTZ: Well, I'm still a little confused about how things -- I mean, let's say that all of these things weren't listed as air toxics already because of this other law. I mean, how -- how are they

proposing to change the way -- let's say we had gotten the BaP document two years ago or something. I mean, how is the process that you're proposing or that they're proposing different from the way that we've been operating?

Because I too -- I mean, I'm very concerned about politization of this process, too, and particular with diesel exhaust booming on the horizon, which I would expect will be controversial, to say the least, and you know, how are we going to ensure -- I mean, I think the process as it's involved is one where, I mean, I think everybody has had their say.

I mean, I get kind of irritated in listening to these industry groups who say they don't have a chance to comment. I mean, it's not like you're -- what compounds you're working on are secret. And the -- and there is -- there is a workshop; there is a public comment period. And I mean, I say about every other meeting I read them, and I think about everybody else does.

So I don't see what the problem is with -- first of all, I don't see what the rationale for adjusting the process is, and I don't see -- I mean, and I just want to at least personally go on record as saying all this complaining, that was one of the things

that bothered me about this thing about increasing public access to the SRP. I mean, these meetings are open. They have a right to submit the stuff. We read it. I mean, what more do they want? I mean, I don't -- take us out to dinner or something?

MS. SHIROMA: Let me clarify that for pollutants like the inorganic lead and for diesel exhaust, which are not federal hazardous air pollutants, the same process will be used where we have the public comment periods, the workshop, the SRP meetings, another comment period, and a Board hearing where the board takes official action.

What 27 -- AB 2728 was adopted to streamline the identification process, and so that's why last April the board adopted the 189 hazardous --

DR. GLANTZ: Right.

MS. SHIROMA: -- including the benzo[a]pyrene toxic air contaminant, and it was intended as well to -- so that the board would not have to have individual hearings on these pollutants. And so our plan has been not to have individual hearings on these pollutants, but from time to time to inform the board of the activities on those hazardous pollutants. And no criteria have been established. It's a simple statement from the ARB staff that in the future, not

only HAPs -- in the future, that on a case-by-case basis we are determining whether it's time to go to the board, to discuss these specific pollutants with them.

But I understand Dr. Froines' articulation and the concerns, and I can carry that message back.

DR. PITTS: Well, I think it's a concern of more than Dr. Froines and Dr. Glantz. I would like to ask -- as I see nods from around the table, it's a unanimous concern of the Scientific Review Panel, including the Chair.

DR. GLANTZ: Well, now --

DR. PITTS: It's deeply --

DR. GLANTZ: Let me ask a couple of clarifications, too, along that line before -- now, is what is proposed here, is there anything in the law, the new law, that states that it's necessary to have on a case-by-case time-to-time basis, to quote what you said, a rehearing, a hearing before the board after the SRP has gone through the whole scientific process? Is -- does the law say that's essential, or is this something that was generated as a result of or during the discussion with WSPA, the Western States Petroleum Association?

MS. SHIROMA: The law is silent about taking information back to the board on the hazardous

air pollutants unless the federal program has changed -- the list. Otherwise, it's silent on the implementation. So this was our response back to WSPA.

DR. PITTS: This is the ARB's response?

MS. SHIROMA: That's right.

DR. PITTS: I noted in the letter, that the comment is made, "We would like to quote from the letter from WSPA:

'We would also like to thank the ARB for providing a formal -- informal forum on January 28 to discuss our concerns. ARB's commitment to work with WSPA to increase the public access to this process. . .'"

I question what more is needed, but I'd like to hear that. I think you suggested that at this hearing. Is that one of the points they are making?

MS. SHIROMA: You know, the point --

DR. PITTS: Let me just finish right now.

" . . . and to improve the interaction between ARB, OEHHA, the SRP" -- the ARB's commitment to do this, has it been faulty with the SRP? -- "and industry is very encouraging."

The last line says, "WSPA looks forward to further dialogue with the ARB concerning expeditious implementation of these

objectives."

That's -- as I think as staff's pointed out and John's pointed out it is our opinion -- I think we all feel that we have made every effort to ensure public interaction and public -- the workshops. And, in fact, if you recall the case -- was it perc that we -- one workshop was not held? And that was not held because of the SRP or because of the process, that -- we all agreed that was a mistake. I think it was clear. And we went ahead and had the initial workshop. So there was this access, and it was clear on the part that the panel -- in fact, the panel very clearly said -- if you look at previous transcripts -- expressed our concern that in fact industry, the environmentalists, the industrial groups, the public, be brought into this process and continually brought in on a formal basis, a regular basis, so that these agendas would be followed.

So, in fact, were they asking, then, -- the question is, What additional public access to the process are they -- are they referring to when they want it expeditiously implemented? And is that, in fact -- one of these -- in fact, the idea of a public -- you know, public hearings on a case-by-case basis. Is that what we're talking about?

MS. SHIROMA: That -- okay. That was one

element, but in truth, as we sat down and discussed face-to-face with these individuals, that was not the key element. They really wanted to have, in truth, better access to staff, not necessarily to you folks. I think they still have concerns about not having oral testimony opportunities at your meetings, but their issue was more early-on opportunities to discuss with ARB staff and OEHHA staff on whether the exposure or, in truth, on the health work, on the current thinking with the cancer guidelines, on the current thinking on risk assessment, the use of the animal data, the epidemiological data. The real focus of their interest was that earlier interaction with staff.

And so Joan outlined that we would take a look at individual meetings, we would take a look at a longer comment period. When we issue an information request on a particular substance, that at that point if industry wants to come in and talk to us, we'll definitely make the time to sit down and talk with them.

I realize that your focus is on whether they're criticizing you and whether or not --

DR. PITTS: We're not -- Genevieve, let me interrupt. We're criticized constantly --

MS. SHIROMA: Yes.

DR. PITTS: -- and to some respect the degree of criticism reflects the amount of effort that's gone into this discussion on the part of the panel. I think that we're not concerned about being criticized. We expect it, and from the environmental groups, and the numbers are too weak and -- that's not a problem.

MS. SHIROMA: Okay. My sense of sitting down and listening to these folks, their true, their real interest and their greater criticism is, frankly, of we, the staff. And so that's why we offered that. We would make ourselves available earlier on for individual meetings, for them to come in before we even sit down to start putting together the draft reports and at least being able to hear what their scientists say -- but that was really the main focus.

And Bill, was that your sense as well, as we sat down?

MR. LOCKETT: I think they were clearly wanting more interaction with the staff, as Genevieve's indicated, as a focus of the discussion, and that included both ARB and OEHHA as well. So that seems to be how we will be proceeding with it.

DR. PITTS: What about the hearing, Bill? That's a question. What about from -- the time-to-time basis that -- compound by compound? After the SRP's

completed the entire process, then there will be hearings that involve the scientific aspects of the entire process for a given compound -- after the --

MR. LOCKETT: My understanding is that the law does not require that. The conclusion that I remember from the meeting was that WSPA was proposing that that be considered, and Mr. Venturini's response was "We'll consider that on a case-by-case basis." That was really the sum of the discussion on that particular item. So I think there's not anything conclusive yet.

DR. FROINES: But I think there has to be, Bill, well-defined criteria for that, because otherwise, it becomes -- what I said earlier, it gets out of the realm of saying that there was a -- I mean, in other words, it's not even clear -- it seems to me if there's a scientific objection, that has to occur within a time frame of the whole process. To bring in a new scientific objection at that point seems to me to be inappropriate because the board is not an arbiter of science, and they're not qualified. They're qualified in many other ways, but not in that respect.

So the question then is, What -- what would be the basis for holding such a meeting? And I think it -- I think that we have to be very clear about that, because the board is not made up of scientists who can

really evaluate the technical issues involved, so if that's not -- since we -- I think we would agree that that's probably not an appropriate thing to do.

Then the question is, What else would bring it before the board? And if it was brought before the board for -- because it's a matter of self-interest, whether it's a public interest group or an industry, it doesn't really matter. I think that the danger is that we are now into a process that is probably not appropriate.

MR. LOCKETT: Well, since we're not into a process about that, I'm not sure we are yet.

DR. GLANTZ: Well, I think that what we're saying is that we'd rather not get into the process.

MR. LOCKETT: Okay. I hear that.

DR. GLANTZ: It seems to me that there's sort of two issues here. One of them -- I mean, I sense a strong sense of unhappiness among the panel members of the prospect of changing -- of opening up the door to using the public hearing process at the Air Board to overruling scientific decisions recommended by this group, and I think people would be extremely unhappy about that.

Now, there is always the situation of new data. Okay. I mean, at the time that we act on a

report like this one, I mean, we're making the best decisions we can based on the available information. And if new information were to become available, we already have a procedure whereby that could be brought -- you know, a compound can be reopened by this panel. I mean, we've had a couple of things that we've looked at in the past.

And what I would suggest, we express our opinion to whoever is appropriate in a formal way is that that's the appropriate way to have further consideration on these compounds. It's not to go and create a new hearing process before the full board on a scientific matter, but to say to WSPA or anybody else, "If you believe that there is new information that warrants reconsideration of the risk numbers or any other scientific aspect of the report, it should be brought back to this panel through the staff, using the procedures we already have in place."

And I mean, I think we should take a position -- I don't know quite who we should express this to in a formal way, but I think we should formally say: We think this idea of holding these hearings at the board level on the science is a bad idea, and that if there are new -- at the time we approve these things, it's the best science that we can find; and that if

there then becomes new information that would cause these conclusions to be changed, that we already have a process in place whereby industry or anybody else can bring that back here and the number can be adjusted or something recommended to be -- you know, taken off the list, to the extent we can -- I mean, with the acts. We couldn't delist it, but we could go back to the board and say "There's zero risk" or something.

MR. LOCKETT: I think you make a very good point, Dr. Glantz. My recollection is -- what I call the Dr. Friedman example -- is that a petition was made to the board, and Dr. Friedman had to review the alleged new material. As a result of that work, a procedure was put into place which, as I remember, calls for coming back to the board via the panel. But as I recall, the board was a part of that process.

DR. GLANTZ: That, I don't remember. Do you remember?

MR. LOCKETT: I'll have to look at that again.

DR. FRIEDMAN: It was the first thing that I did when I joined this panel, and it's sort of vague in my mind. It was benzene, wasn't it?

DR. PITTS: Benzene.

DR. FRIEDMAN: Yes.

DR. GLANTZ: Well, but I think the question is, Who's the dispositive group? And you know, the listing of something as a TAC is the board. And my understanding is that at this point, being that it's already listed, that the issue of coming up with a number, a scientific number, is this group is the dispositive group. And so it seems to me that it ought to come back here.

And you know, I just want to echo what John said. I mean, I'm very worried that politics is being injected into this process and in an unacceptable manner, and I think that one reason that this process has had a lot of credibility is the fact that it's been reasonably unpolitical and content-based rather than science -- or than politically based, and the separation of the risk assessment and the risk management, which was something we heard for a long time, was the deal with that.

So I mean, if the board wants to make decisions at their level on what to do with this information, that's their problem, and that's none of our business, in a way. But I think it could -- I don't want to see us put in the position of coming up with numbers that are politically expedient to get the board or anybody else off the hook.

MR. LOCKETT: Okay. We'll take those points back, and we'll review that prior and the existing procedure about when there's been a petition.

DR. FROINES: Can I raise one other issue? Since we're quoting Gary Friedman, I think I'll use him again.

(General laughter.)

DR. FROINES: On benzo[a]pyrene -- on perchlorethylene, just to use that as an example, I must have had -- George, I don't know, 20, 30, 40, 50 phone calls with George and his staff over the development of that document. We talked with Dale Hattis in Boston. We had a public hearing. We had -- we went before the board. We had lots of meetings. I mean, it was extremely time-consuming. And I feel pretty strongly that I'm putting too much time in on a lot of chemicals, and I was sort of hoping that we could fly through benzo[a]pyrene and just be out of here by noon.

And Gary raised the issue at the last meeting about how much time does a panel member have to put into a process, so if WSPA or other groups say that they want to have more input to the SRP, I frankly don't know how we're going to handle that. I mean, it just is way out of the scope of this committee's activities, it seems to me. We all have other things to do, although sometimes

it doesn't seem like it.

MR. LOCKETT: I think the thrust of the WSPA proposal was more time with the staff, but there was the reiteration that there would be workshops, there would be SRP participation. So I think it's in that same model that we've been using.

MS. SHIROMA: And Russ White, Chevron, did acknowledge that you spent several hours -- he was the only attendant at the workshop, and you personally spent several hours talking to him about the science and his concerns, and he said that he appreciated that very much, and it was a rare opportunity. So that worked very well for BaP.

DR. PITTS: Yes, Dr. Seiber.

DR. SEIBER: Genevieve, you said that the chief concern was access to staff, but also they were concerned, I guess WSPA and perhaps others, about the lack of a public comment period at these meetings.

How serious is that comment? And also what does the law tell us in terms of how these meetings are to be conducted and the ability for public comment, say, at a meeting such as this?

MS. SHIROMA: The concern is not that there isn't a public comment period -- there is a public comment period -- but the opportunity for oral testimony

at these meetings.

DR. SEIBER: Oral testimony. All right.

MS. SHIROMA: And it is a comment that comes up often. However, the law gives this panel a choice as to how you're going to accept comments and information so that the law definitely gives the panel a choice. And I think that -- well, the comment may come up again that it is fairly well accepted -- again -- perhaps to use Dr. Gary Friedman again -- that a scientific argument can be made in writing, and can be made credibly in writing, and that's something that the panel has divined and something that has been accepted and at this point stands pretty firmly.

DR. GLANTZ: Well, I would go further than that, Genevieve, and I would say that the scientific argument is best made in writing.

DR. FROINES: Exactly.

DR. GLANTZ: You know. I mean, because it's much harder to really judge something when you're just listening to it than when you've got it sitting in front of you in black and white and can think about it and can examine the details, which are very, very important. So I think if we were to be taking verbal comments, we -- the quality of the product we produce would probably be lower; because human nature being what

it is, people usually wait until the last second. If we were taking oral comments at the meeting, then people would come in at the last second with arguments orally that would probably not be as well thought out or as carefully crafted as the written comments that we get.

So I think it's, in fact, in the interest of the commenters, not only -- not just the panel, but it's in the interest of the commenters to be submitting written comments with enough time for us to think about them and digest them.

DR. FROINES: I don't understand it -- I'm sorry, Jim.

DR. SEIBER: I agree with your comments, though, about the written argument being the most cogent. But, in fact, if it was accompanied by statements that surface, concerns that right now are going to ARB staff and not coming directly to this panel, I'm a little bit concerned.

I know we've discussed having oral testimony at these meetings. In fact, we discussed it within the last year. And I can't remember what the resolution was, but it seems to me that maybe we ought to reexamine that.

DR. PITTS: Let me give a little history perhaps at this time. It isn't, like you said, would

happen. It did happen. It happened on dioxins, on a rainy day, at the Los Angeles airport, eons ago.

John and I, I think, are the only two people here that were at that meeting, and it was a very controversial meeting. We had Dow Chemical; we had all the groups there. And we walked in and sat at the table, and as we came in, having read the manuscript, having read Part A, read Part B, read the literature, done our homework, basically -- which I think -- I think is really -- I should point out that this panel does. I'm very proud of the panel for the homework they do. They really do put the time and effort in, as pros, in a time-filled life. They're busy people.

We got in, sat down, and then -- then, first of all, the ARB staff came in and put a bunch of material in front of us that changed the whole perspective -- or had several changes. "Well, look at this." And then the audience starts getting up and raising their hand, and the person from Group A says, "Well, we have a model on this. And that happened to that, and this happened here," and totally changed the thrust of it. We just sat there and finally said -- excuse this -- the court reporter -- but "The hell with this." That was the attitude of the panel, and that was a revolution.

It was a formal revolution. One of the things, the great things that happened, that that did provide, a basis for a statement that no, we will not do this in the future. We cannot make informed, scientific judgments on verbal material presented at the time of the meeting. And the material is not just giving a general statement, this was going down to details and looking at tables. And ever since we have maintained that particular policy. At the same time, as I mentioned earlier, insisting that public access through the established chain of events that has been developed through the years, that that be maintained by the staff, and the panel wants to be sure that it is.

So that I'd be more than happy to -- and I think the panel members -- to explain this, if it's necessary, to other ARB staff, or to the chairperson, to anyone. We'd be happy to explain why -- what came about, why this is in the format that we have, and that actually it is for the protection of not just the panel -- we can handle ourselves -- it's for the protection of the ARB, the OEHHA staff, for the individuals, for the organizations, and for the protection of the entire group in terms of what's in the legislation that is asked -- that asks that these groups perform -- our group performs as it does, and the

staff. So that it's for their protection actually of both -- of the industrial parties or environmental groups, whether you're talking about the lung association or whether you're talking about an industrial group such as WSPA.

It's important that the playing field be in a sense level -- excuse the cliche -- but it is important from all sides. It depoliticizes the situation on both sides, and it seems to me provides a -- a procedure which is the essence to the old 1807 legislation, from the legislature, and the spirit of that, somewhat modified of the new legislation, so --

DR. FROINES: Can I --

DR. PITTS: Go ahead. I just sort of --

DR. FROINES: I wanted to comment on Jim's comment, which I agree with to some extent and disagree with at another level too.

And I would propose basically a compromise. The workshop that we hold for each chemical is an opportunity for interested parties to make written and oral testimony, and it -- the perchlorethylene one, I think the only presenters were industry representatives and then some scientific people like Dale Hattis, who had been riding under contract with OEHHA. And that session ran from the early morning until 4:00 or 5:00 in

the afternoon. It was an all-day session, and there was no question that the parties had ample opportunity to provide oral testimony. There was no question that there was ample opportunity for written testimony.

And I would support that notion, and I would argue that maybe what we should do is not just have the two lead people attend those workshops, but try and get a wider representation from the SRP acknowledging the time constraints that everybody operates within. And that's what I would propose in relooking at this issue.

I think to have oral testimony today on benzo[a]pyrene would be inappropriate, because I think that we should be at the point by the time we get to this stage where this is a working meeting of the panel. It's a public meeting, but it's also a working meeting where we are taking the opportunity to discuss what we have read and thought about and the considerations that we've made, and I don't think that this meeting is the time to take new testimony. I think we should have that before we ever get here to the final meeting.

So my proposal would be that we try and expand the -- and improve in whatever way possible, the public hearing, on the one hand, but not to make this meeting where we take up a particular chemical an open

meeting where there is testimony. But -- and I think I've made those arguments, so that's what I think.

DR. PITTS: Any comments from the panel?

DR. SEIBER: Well, I think that's reasonable. I just -- it kind of is hard to evaluate a letter like this, and where it's coming from, without having the person -- you know, seeing them eye to eye. And what we've got is a filtered interpretation via Genevieve, and I just wondered if it wouldn't have been helpful in a case like this, maybe not this exact one, to have the person here presenting his argument. It could be done at the workshop.

DR. FROINES: Well, also it's not clear to me that that meeting, when it happened, since it raised fairly significant policy issues -- that it wouldn't have been better to have had an SRP member at it as well.

DR. PITTS: That was my concern, one or more SRP members at that meeting to present their side of the situation.

DR. FROINES: I think you're right. I mean, I think where somebody is going to raise a fundamental policy issue, we'd better figure out how we're going to hear it.

DR. PITTS: Are there other comments?

Stan -- I guess Bill. Let me ask Mr. Lockett, Would you want a formal motion of the panel, a formal statement to the effect -- basically along the lines that Dr. Glantz presented to us giving our concern and Dr. Froines? Would you like that formally as a motion? I could -- informally, I saw the heads nodding as he made his statement. Now -- or would you like to take an informal nodding of heads, as it were, and say: Look, let's just get back as an informative, a rather direct statement, and carry that back to Peter and Don Ames and to the powers that be, indicating where we stand, and then look -- we would look forward then to a response from them at some reasonable time.

MR. LOCKETT: I think the record's pretty clear. A formal motion is fine. I did sense the general consensus of the panel, but if there's a panel member that feels, though, that there should be a formal recognition of that more than has already taken place, that would be fine.

DR. PITTS: Would anybody care to do that, or should we let it go?

DR. FRIEDMAN: I think the feeling seems to be so strong, I would like to see it as a motion that we vote on. Because otherwise, it's going to be lost in

the midst of all this.

DR. PITTS: Stan, would you restate that motion.

DR. GLANTZ: If I can remember exactly what I said.

DR. PITTS: It was eloquent.

DR. GLANTZ: Could the court reporter read it back -- find it?

THE COURT REPORTER: I could give it a try, but it's hard to find something.

DR. GLANTZ: Okay. Well, as I recall what -- I mean, this discussion has sort of been a very broad range. I believe the point that I made was to -- was that in our view, we do not see the need for Board hearings on these -- on the scientific results for things which have already been listed as TACs or -- and that in the event that after this panel has finished its work anybody finds or feels that there's new information which needs to be taken into account and reconsidered, that that should be brought back to the panel, using the procedures we've already established to handle that, and that we are very concerned that this process remain as depoliticized as possible.

Is that -- that was pretty much what I said, as I recall. And that the Chair send a letter to the --

to appropriate people expressing this view on behalf of the panel.

MR. LOCKETT: Yes. I don't think there's been any movement to conclude on the ARB staff part that there would be hearings, just that we would explore further. I think your motion answered everything but the one piece that I heard -- which I've now lost -- which related to Dr. Froines's additional -- oh, the encouragement of the SRP -- of additional SRP members to come and participate in the workshops. That was the only piece I sensed was missing from what I heard as the consensus of the panel.

DR. GLANTZ: I'm happy to see that included.

DR. PITTS: That would be fine.

DR. GLANTZ: So I guess my motion is that the Chair send a letter to the appropriate people at the ARB expressing the sense of the panel on these issues.

DR. FROINES: Can I ask another question?

DR. PITTS: Yes.

DR. FROINES: That would just -- I think this is fine.

Once, years ago, when we were doing methylene chloride, I met two or three times with -- how fast you forget.

What was his name?

DR. DENTON: Paul Cammer.

DR. FROINES: Paul Cammer. For some people it's indelibly --

(General laughter.)

DR. PITTS: Notice the staff was right on top of that one.

DR. FROINES: But I met with him twice in my office, and I would appreciate -- I think we should take a minute when this is finished to just say what we think as a panel are our guidelines for ourselves. Should we be meeting privately with people? Shouldn't we? We've never really kind of dealt with it.

DR. GLANTZ: Well, let's deal with it.

DR. FRIEDMAN: I second Stan's motion that Jim write the letter.

DR. FROINES: That's all.

DR. PITTS: Moved and second. Any further discussion? All those in favor?

(All panel members raised their hand.)

DR. PITTS: Opposed?

(None.)

DR. PITTS: I should do so reasonably expeditiously. All right.

Now, the other point -- before we get -- I

have another quick thing about that. I was going to ask Genevieve another question which is relevant to this whole question. My problem --

DR. GLANTZ: Are you enjoying yourself?

MS. SHIROMA: Abundantly.

DR. GLANTZ: What did she say?

DR. FRIEDMAN: I didn't hear that.

DR. PITTS: We haven't even started on BaP as a part of a complex mixture of --

(General laughter.)

DR. PITTS: That's later. But let me ask it again. I think procedurally it's a very important aspect regarding procedures that we've established over the years.

Do you recall that -- you mentioned to me at the last meeting that, in fact, with the diesel report, that the draft would go out or could go out prior to having the lead persons for diesel examine it and put it in the report. Remember that? And I expressed my concern to you at the time. That was an informal comment we had back and forth. And I asked that this be explored because it struck me that this would -- as we mentioned, would be going back in time to precisely a situation that wasn't desirable, and that I would like to know what -- what is the official status of (a) the

diesel report, in terms of will this go to the lead persons prior to public release? Is that concluded now? Or is that going to be done on a compound-by-compound basis? Would you like to . . .

(The staff members conferred.)

DR. FROINES: I'm waiting for their answer. I'm looking for my diesel document from George.

MS. SHIROMA: Dr. -- in that conversation you reminded me that for some years now, routinely, the lead members do get an opportunity to review the report just before it goes to the public, and so it looks like our intention is that we would continue with that process. That's been your process, and we'll continue with that process.

DR. FROINES: That's not the process. The process was that there was an interactive relationship between the lead person and the staff, and that throughout the development of the document, the lead person would work with the staff to ensure the scientific quality of the document. It was not -- it was not, in fact, something that the lead person would just receive a document just before it went out for review.

MS. SHIROMA: I'm sorry. I didn't mean to

say that there wasn't that interactive process prior. I was speaking strictly to that document, that whole document, as far as when -- at what point you receive a copy of that. And ordinarily when we work on the parties, with Dr. Pitts, when we have a complete document that we feel is fairly viable, we've transmitted a copy for his review, and then we've had conversations back and forth on whether or not it needs to be improved, additional references, made those changes and then gone out with the public comment period. I apologize about my misunderstanding on that.

DR. PITTS: Interactions of great length.

DR. FROINES: We get a draft early in the process, and then we're part of the changes in the draft as it goes. Now, usually George would like more input than he gets, but basically, it's an intricate process that we've been involved in, and I think that was true with Chuck on lead, and so on and so forth. So that we get the draft -- we get early copies of the draft so we can take a look at it.

DR. BECKER: I think there's a difference between the perceived questions and the reality of it. I think the reality is that there's been a lot of interaction, at least in my time, going back and forth on these documents. And for some reason, the last few

documents, there always seems to be something that's happened towards the end -- a new letter, something faxed in -- and it appears that Stan's motion will take care of that -- at least I think it does. And I'm not sure, I think these are just aberrations of these compounds and these few things.

Maybe Jim -- not seeing this before, my own take is that there has always been a little bit there. There have been a few of these comments. But for some reason in the last couple -- lead, in particular -- there were substantive issues that came up right at the end.

And I think our procedures are such that we've bent over backwards to be fair to get any sort of input. I mean, that's -- that's why I'm concerned about a reality versus a perceived reality. Somehow the -- my own take is that the people don't really take those meetings that we have, the seminars and so forth, really seriously.

In fact, at least in the ones that I was involved with, there were very few substantive issues that came up -- with the lead situation -- or relatively few -- and then suddenly, right before the document came out, there was this surge. So my own question is whether it's really clear to everyone that this process

really goes in this fashion. And it seems to me that it is clear. And I'm just not understanding -- maybe -- you're the one who knows the most about it. Why have we seemed to have more recently these kinds of things right at the very end?

MS. SHIROMA: Well, I think that it's -- with each substance the audience has changed, and with some of the audiences, they worked with us all along, and they're familiar with the process. In other cases we have people coming in who are not as familiar with 1807. I think also there is an aspect of -- I want to be fair about this -- but we're always going to have people out there criticizing us, and so we are constantly reminding these individuals about the process, about the workshops, the fact that the SRP people are there, that we are accessible by phone, we are willing to meet. But we still have our detractors out there criticizing.

I think, particularly with diesel coming up, inorganic lead, we're really looking at ways to get the word out about our process, whether we can develop some brochures to send out to our thousands of -- to our mailing list, with a thousand people on the mailing list. It's something that we're constantly looking at.

I think also in terms of the -- these recent

situations where we've had last-minute considerations, it does bring up a point that each time you had a significant issue or even an insignificant issue, yes, we have talked to the lead person, let them know ahead of time, to get a sense of their reaction, to make sure that we're on the right track scientifically. So no doubt about it, there are those numerous phone calls and information going back and forth. And we did do some of that with you, Dr. Pitts, on the BaP.

DR. BECKER: And I call your attention to this week's "Science," which carries the lead editorial that rivals even Stanford's conference in which there were major questions about the whole risk assessment process. And I view some of this as people wondering about this whole process, and that we're just seeing a little bit of the side flack, if you will, that comes about where people want to have, if you will, more input in the situation.

DR. GLANTZ: Well, I have a sort of more cynical view of it, I guess, or -- I don't know if cynical is the right word, but people -- again, whenever the deadline is, people will do it the day before. And I think they're not paying attention at the workshops because it's not the deadline. And when the report is finally all written, you know, and it's getting to the

point where it's getting real, and then it comes to us, people get all hysterical. And you know, I think that if you -- you need to say to them, "Listen, you know, there are rules about this, and here they are."

And I think getting the word out as best you can is a good idea, but there are always people who are going to get it done at the last -- whatever they perceive to be the last minute. And what you need to do -- and I mean, our goal is to try to get them in at the beginning, because, in fact, if these people want to have influence on the process, the time to do it is when you start, not when you're finished.

But I think we need to be firm about it, because I -- I just want -- I think that the final -- I mean, when I read these documents, I read them like a manuscript I'm reviewing for a journal. And the way that you do that is you sit down someplace where you're not being bothered and think about it.

And having a bunch of people coming and testifying orally, I mean, it's just not -- I don't think it would add anything to the process, and I think you need to say to these people -- you know, you should be accessible, people should be accessible, but this is the panel which is the arbiter of the science, and we don't want political considerations to be injected,

changing what the -- what the science says. And I think that we want people to be told "You've got to obey the rules."

I mean, this has come up a couple of times in the last couple of meetings, people trying to jamb stuff into the process at the last possible second. And I think that that just has to be resisted.

You're right, they'll complain, but it's their own fault.

DR. PITTS: Dr. Friedman.

DR. FRIEDMAN: We have one issue in this hanging, and that is where -- the question John brought up about how accessible should we be to outsiders.

DR. PITTS: Yes.

DR. FRIEDMAN: And I think that's up to us as individuals. And I think if you want to talk to somebody, fine. But on the other hand, if you want to say, "Look, I want to go through the formal process and not -- I want to see how the OEHHA or ARB responds to your comment before I -- you know, consider it. I don't want to talk about it without their answer." I think we should be -- feel free to do whatever we want in that regard. And --

DR. GLANTZ: And --

DR. FRIEDMAN: Could I finish?

DR. GLANTZ: I'm sorry.

DR. FRIEDMAN: So I feel, though, that if we want to consider this more formally, in more detail, we should defer it to another meeting, and I think it's important now that we go back to the BaP discussion.

DR. GLANTZ: Can I just say one thing and then we'll defer.

I actually have a very different view. I don't think that we should -- that the individual members of the panel should be meeting privately with people regarding the reports that are in front of us, in the name of having a public process. And I think that the material -- I mean, there is a workshop, and I think that the material that comes to us should come through the staff, through the normal process, where it's all available to anybody who wants to see it, including -- I mean, when you look at Part C of these reports, we're not the only people that get Part C. Those are a public document. Everybody has access to them, everybody can comment on them. And I think that I would -- I personally would much rather we say to people, "If you want to communicate with us on these issues, do it in writing through the normal process."

DR. FROINES: Well, I was prepared to accept Gary's point of view, and now you've thrown in

the water, making it muddy. So I agree with Gary that maybe we should take it up at another meeting.

DR. GLANTZ: I move that we accept the BaP document without changing it.

(General laughter.)

DR. FROINES: I have one more thing, though, that -- based on this discussion with Genevieve. And that is, Is it the sense of this committee that, for the lead person, the earlier we get the document so we can interact with staff, the better? Is that the reasonable point of view? I mean, it may mean that Stan may get the document earlier and never deal with it until the day before the meeting, as he so eloquently describes his policy --

(General laughter.)

DR. FROINES: -- but if you want to work with the staff, it's nice to get it early. And so I would -- I would prefer that we as a group say we would like to be able to have those documents as early as possible, and that we want them when they're available, so we can work with them, and that will facilitate the process -- and move away from this notion of -- that came up with Jim, where it was actually said that we wouldn't even get the document, period. So I am arguing for the other position.

DR. PITTS: And a bit of history again. Joan, reminded me. Didn't we go through something like this a couple or three years ago, and agree that if the lead persons could have preliminary drafts -- not draft, preliminary drafts -- and folks could come to the lead person, we could take shots at those -- and I recall shots here and there. Formaldehyde, for example. I think that went through two stages, didn't it? Am I right?

DR. DENTON: Dr. Pitts, as I remember the process, lead persons were brought in to just eliminate, you know, difficulties with the documents later on which developed, and that we did give you preliminary drafts and would go through several revisions. And that's what's been our process up to this point.

DR. PITTS: That's right. And that's what concerned me about diesel. I felt that -- as far as I know -- I've not seen the document, I have no idea when it's coming out, and John has never seen it.

By the way, when is it targeted to come out, or was it given a -- you might want to use the maximum -- whatever they call it. Maximum likelihood -- what is it? Maximum likelihood estimate of when -- of when that will come out?

MS. SHIROMA: As far as when the

preliminary draft document will be available for review?

DR. PITTS: Well, yes. And when you're planning to have this -- a formal hearing on this within three months? Four months? Seven months? What are we talking about?

DR. FROINES: I think George can probably give me a document almost immediately.

MS. SHIROMA: And I think we're real close to completing Part A.

DR. PITTS: I'm just curious about that.

DR. ALEXEEFF: My name is George Alexeeff with OEHHA. We haven't fully assembled a completed diesel document yet. Okay? So nobody has a draft. Not even us. We have had certain sections reviewed by experts in that particular field. Like on the genotox section, we found people both internally within OEHHA and some people within the Agency, some people outside the Agency, to review sections of the document. Okay?

So the way the process is going to work is once we've finished assembling the document, which we're very close to being done, any day, then we will then -- our plan right now is to complete a sort of internal review, which from our perspective, that's -- it includes the Scientific Review Panel leadman. And then

depending upon the complexity of the document, it could include some other experts in the field, outside of OEHHA, outside of the Agency, that could serve as kind of a peer review person.

And the example previously, we had Dr. Dale Hattis review perc, as that kind of an expert. And so at this point our plan would be to have probably two people, in addition to Dr. Froines, review the diesel document, and we would probably allow close to a month for that time. Then once we've received their comments back, we'd make changes to it -- to the document, as needed -- revisions. And then once we've made those changes, then we would set it over to the Air Resources Board, and the Air Resources Board assumes about a 45-day period once they get our final version, that they can then put together the final executive summary and send it out.

So that kind of gives you -- the question will be, How many comments will we get and how many changes will we have to make? That will be the key issue. In some cases when we felt that the document was not that controversial or that there would not be a lot of changes with ARB, we've compressed several time periods and had some overlap within those periods, where they would be preparing the executive summary with the

idea that we didn't think there were going to be a lot of substantive changes, at least on the final risk number or whether it was a carcinogen, so we've compressed it. But we haven't decided between ARB and ourselves as to whether or not we can compress it or should compress it or not.

So that would basically be the process, though. So it still is some time before it comes out. We've -- if there hadn't been the other regulations regarding diesel, I don't think we'd even be, you know, discussing it. It's just kind of our awareness has been brought to -- up to a very high level of the document. And so we've been -- made some preliminary discussions about some of our -- where our findings are leading and that kind of thing. But it's not as if we have a draft document that we're circulating to everybody but the panel right now.

DR. PITTS: No, no. That wasn't the implication at all.

DR. ALEXEEFF: Okay.

DR. PITTS: What I heard was that the draft document would be sent out prior to its being discussed or shown to the panel, that type of thing.

Let me ask a question. Maybe it's a dumb question, but have we had a formal workshop on diesel

exhaust?

MS. SHIROMA: No, we haven't.

DR. PITTS: Now, where does that stand in the process?

MS. SHIROMA: That -- ordinarily, once we release the draft document for that first public comment period, we schedule that first workshop within that comment period. So that's where we are. We're really at the very beginning part of the process for diesel. We did have that conference of experts some years ago.

DR. PITTS: Yes. That was quite a while.

MS. SHIROMA: Yes. So -- so once we release that document, we will release it with a schedule for a public workshop.

DR. PITTS: It will come out in a form like this (indicating); is that right?

MS. SHIROMA: That's right. But prior to that, as you're saying, both of the lead persons will have the opportunity to work with us on a preliminary draft.

DR. PITTS: Okay. That's fine. I'm glad to hear that.

DR. ALEXEEFF: It won't be like this. It won't be the "Draft SRP Version." It will be "Public Review Draft" or something like that.

MS. SHIROMA: Yes.

DR. PITTS: Yes.

DR. ALEXEEFF: And then after the Public Review Draft, we make changes, and then it's the "Draft SRP Version."

DR. PITTS: Three-stage process: The preliminary, and then the draft for the public, and then --

DR. FROINES: Do you know who you're going to have review that?

DR. ALEXEEFF: If you have a suggestion, we're -- it's getting -- we'll be happy to accept it. We can talk about it afterwards.

DR. FROINES: Well, I think that -- we should talk about it. It is germane to the BaP discussion, as a matter of fact, but I think that we may ask Dr. Friedman to look at it -- some of the epi early on, because that's going to be one of the major issues, I think.

DR. GLANTZ: Why don't we do BaP?

DR. PITTS: Fair enough. I think I sense a general feeling, intuitive, that they won't object.

DR. ALEXEEFF: I think that would be, you know, Dr. Froines, your discretion. I'm trying to recall. I think there were previous documents -- I know

there were; I can't think which ones -- where there were parts where the lead person felt that -- I think -- and it might have been in exactly this kind of a situation, where we had kind of a toxicologist lead person, and then we wanted some epi data review, so we had an additional SRP member look at that section. So I think that would be your discretion once you saw the document and felt that, you know, you wanted some other comment from another panelist.

MS. SHIROMA: Joan has a little bit left of her presentation on the BaP.

DR. PITTS: Fine. Thanks very much.

DR. GLANTZ: Back to BaP?

DR. DENTON: Okay. As I was saying, I just wanted to briefly go over the revisions that we provided to the panel. Last week we sent the panel members --

DR. GLANTZ: Could I just ask one question? There was some revision stuff in the red folder.

DR. DENTON: That's --

DR. GLANTZ: That is stuff you sent us. Are those the same or additional --

DR. DENTON: No. That's what I was going to go over --

DR. GLANTZ: Okay.

DR. DENTON: -- with you.

So we did send you last week some revisions to the Part A, which included new references to Chapter 4, a new Appendix F, and a new Table 5 with a Part A -- in the indoor air.

Then as a result of several conversations that we had with Dr. Pitts and one conversation with you, Dr. Glantz, we brought back -- we brought to the panel today some revisions that you requested to Part A. And specifically we've added a new section into the introduction on mutagenicity of the BaP and other PAHs, two paragraphs.

We've also added some clarifying language into different parts of Part A, specifically about BaP being a product of incomplete combustion, part of a complex mixture of many PAHs.

We also, per Dr. Pitts's request, brought up the ambient concentrations of the five other PAHs that we've measured in our monitoring system up to the body of the report.

And per Dr. Glantz, we added a footnote to the emissions table, in which we say that the emissions are not -- the emissions are not listed in order of contribution to exposure. And that to -- for exposure

information, the reader is directed to the exposure chapter.

Today we brought to the panel an updated Table 5. The table that we provided in your package was not the most up-to-date, and we provided that. That's a single page Table 5 that's in your package.

And also we noticed, at the very last minute, that there's a paragraph on page F-24 which gives some information on burning wood contribution to indoor air. And that information, although it's not said exactly in the same words, is duplicated in the previous paragraph on that page, so we plan to delete that last paragraph.

So those are the additional revisions that we've either sent to you or brought to the panel today, and so now Alex and the rest of us are open to further -- or other questions or any questions on BaP.

DR. FRIEDMAN: I had some rather minor items. Are you through with the whole presentation on it?

DR. DENTON: Yes.

DR. FRIEDMAN: Okay. On page 2 of the Executive Summary, something's missing at the bottom of the page. It just doesn't connect with the top of the next page.

DR. DENTON: I see that, Dr. Friedman. I

believe in our revisions that we brought today, we have the entire -- oh, I'm sorry. You're right. I was thinking about Part A.

It's a further description of the position of BaP with IARC and EPA.

DR. FRIEDMAN: I'm sorry. Would you just read it like -- it's just one line or something?

DR. DENTON: Right.

DR. FRIEDMAN: Could you just read it to us.

DR. DENTON: I don't have the original before me, but it is -- it is the conclusions of IARC and EPA --

DR. FRIEDMAN: Oh, I see.

DR. DENTON: -- which is missing. So I don't know if it's one sentence -- on -- one line or two lines.

DR. FRIEDMAN: So that's what it is. Okay. Thank you.

On page 7 you have at the end of the first paragraph -- "in California, exposure to benzo[a]pyrene through drinking water is expected to be negligible." I didn't know how to interpret that when I first read it. It doesn't sound very reassuring to me that we really know how much there is. I noticed, though, in Part B

that you say that there's just no data in California, and I wonder if it might be worth just enlarging that a little bit, saying there's no data, but why you would expect it to be negligible.

DR. PITTS: What page was that?

DR. FRIEDMAN: Page 7, the last line of the first paragraph.

DR. PITTS: Oh, okay. Thank you. Through drinking water -- exposure to drinking water.

DR. FRIEDMAN: I just didn't feel -- you know, it's expected to be -- on what basis do you expect it to be negligible.

DR. DENTON: We can bring that information up from part A.

DR. FRIEDMAN: On page 10, I -- again, I brought this up at the last meeting. I guess you have a boilerplate table that you keep using on these compounds, but I wish you wouldn't say these compounds are approved by us -- at the heading of this table -- which I mentioned at the last meeting.

DR. DENTON: Reviewed?

DR. FRIEDMAN: Reviewed or something, but we did not approve these compounds. We approved the reports about them. Perhaps that's what you mean.

DR. DENTON: We'll change that "approved"

to "reviewed."

DR. FRIEDMAN: I don't want it to be embarrassing or whatever.

DR. SEIBER: I think it means that you approved the unit risk of the compounds. Isn't that what that means?

DR. FRIEDMAN: Oh.

DR. DENTON: Yes, those are the approved unit risk values.

DR. SEIBER: Which I think that is true, isn't it?

DR. FRIEDMAN: Well, okay. I think that -- yes, I guess we did approve the unit risk, but it says you --

DR. FRIEDMAN: It's poorly worded. It could be reworded so it doesn't sound like we've approved the compound.

DR. PITTS: Compounds whose unit risks have been approved by the panel.

DR. FRIEDMAN: Yes. Because this keeps coming up in all your reports.

Page 12, this is in the third line, you have PEFs, which you do define in Part B, but I think it would be helpful to define it here, too, with potency equivalent factors. I don't think you ever define it on

this Executive Summary.

One other thing. On page A-35 on Part A, on Figure IV-4, you show a graph there, and the heading of that graph says "Almost 23 percent of California's population is exposed to concentrations of benzo[a]pyrene equal to or greater than the population weighted average." And I gather, from somewhere else, that the population weighted average is .53.

DR. DENTON: That's correct.

DR. FRIEDMAN: And when I look at this graph, I can't see that the bars to the right of this add up to 23 percent of the total. There's something -- the graph does not agree with that title.

DR. DENTON: We'll check that out.

DR. GLANTZ: Yes, I had -- on that same graph, I mean, if it's a population-weighted average, why wouldn't 50 percent of the population be above the population-weighted average?

DR. DENTON: Well, the population-weighted average is the average that the majority of California's population is exposed to. And that's what the population-weighted average, to take the mean concentration with census track centroids and estimate what the majority -- and that's in the large air basins. I mean, that's where the majority of the

Californians live.

DR. GLANTZ: Right. Well, I mean, I guess it's right, but it seems to me that if you're weighting it by the number of people, then -- that you would end up, because you're weighting it by population and then finding the midpoint weighted by population, just seems to me that ought to be -- 50 percent of the people ought to be above and below the population-weighted average. If you have just the raw average, then maybe not, but if you're weighting it by population, it just seemed to me it ought to be --

DR. FRIEDMAN: I think that would be true of the median, but not the mean. I'm not sure that would apply to the mean.

DR. GLANTZ: Yes. But I guess the question is -- well, I think in general, you'd be right, if you were computing the raw mean, but if it's a mean weighted -- population-weighted mean, wouldn't that -- I mean, maybe I'm wrong, but I've got myself totally confused about that. But maybe you can explain.

DR. FRIEDMAN: I mean a lot of times, you know, the population mean is not equal to the median or --

DR. GLANTZ: That's right.

DR. FRIEDMAN: -- where an equal number of

people are above and below, and I'm not sure that weighting by the population would correct that possibility that the median differs from the mean.

You're saying that the population-weighted mean is always equal to the median?

DR. GLANTZ: Yes, I would think it would be, if it's population weighted.

DR. FRIEDMAN: Somehow --

DR. GLANTZ: Maybe not. I don't know.

DR. DENTON: I can just describe to you my understanding of how the population weighted is done.

DR. GLANTZ: Okay.

DR. DENTON: That we have the 21 station air toxics network --

DR. GLANTZ: Right.

DR. DENTON: -- and all of these -- the network -- we have data derived from the network, for example, on BaP. That raw data, then, is taken, for example, from Long Beach -- Long Beach station. And that data is weighted with the census track centroids of the population that lives around it.

That goes into a statistical model, which together with all of the other -- you know, the concentrations of weighted according to the population to which that concentration is exposed.

DR. GLANTZ: Right.

DR. DENTON: That goes into a statistical package, model, whatever, and it comes up with our .53 value, which is our -- the mean population-weighted estimate for California.

In the histogram -- and we actually have some written information on page A-33 -- what we've said is that 23 percent of the population -- around 4.6 of -- the study population of around 4.6 million people. The toxics network doesn't -- doesn't cover all the population in California, it covers approximately 20 million. So approximately 23 percent of that 20 million that's represented by the toxics network is exposed to BaP concentrations above the population weighted average.

DR. FRIEDMAN: Which would be a portion of the bar above .5; right?

DR. DENTON: That's what I'm assuming. I don't know -- I'm assuming they're not incorporating .5.

DR. FRIEDMAN: Right. So there would a portion of that bar, plus those four little bars to the right?

DR. DENTON: That's right.

DR. FRIEDMAN: Which would not add up

to 23 percent.

DR. DENTON: Which would be 23 percent.

DR. FRIEDMAN: But don't you see -- do you agree that they don't --

DR. DENTON: Right. Exactly.

DR. FRIEDMAN: That's all I had.

DR. PITTS: Craig, your comments?

DR. BYUS: I don't have anything.

DR. PITTS: Stan?

Well, I have a letter by the way, for the record. Dr. Glantz wrote this.

DR. GLANTZ: I don't want that in.

DR. PITTS: No, I won't read it. Do you have any comments?

DR. GLANTZ: Well, I -- I had sent a couple of comments in, informally, as part of the -- to avoid problems at the meeting. I didn't really mean for that to be part of the formal record. I was hard to find, so I sent them a note with some questions.

I'm still troubled by this. I'll work on it. Other than that, I was happy with it.

DR. DENTON: Oh, I guess I should add that during our telephone conversation with Dr. Glantz, we discussed his comments in those -- in that letter.

DR. PITTS: Okay.

DR. DENTON: And for our Part A, we have added the footnote to the emissions table, and then OEHHA -- OEHHA will be also addressing your questions, so that your concerns have been addressed.

DR. GLANTZ: Yes.

DR. PITTS: Dr. Froines?

DR. FROINES: I'll be last.

DR. PITTS: You'll be last. Okay.

DR. GLANTZ: Oh-oh.

DR. PITTS: Let us go around. Chuck?

DR. BECKER: I have a substantive question on Part B.

DR. PITTS: All right. Jim?

DR. SEIBER: I'll let him go first.

DR. WITSCHI: Can we talk about Part B too? No?

DR. DENTON: That will be next.

DR. WITSCHI: Okay.

DR. SEIBER: I have a number of comments, but is this the right time?

DR. PITTS: This is the right time on Part A, you bet.

DR. SEIBER: Well, my major comment is on the singling out of agricultural waste burning. If we just took as an example this draft findings of the

Scientific Review Panel over on No. 4, which I guess is the document we're going to produce as a result of our discussion, it says ". . . where wood and agricultural waste are burned" -- that's a typical example.

From my point of view, the correct wording ought to be "combustion and vegetative material." Wood, agricultural, bio mass, grass fires, et cetera, I don't think we have enough information to single out agricultural as a major contributor here.

I went back and tried to track down the emission factors that were being used to make that claim, and I found a single line in a big table back in the appendix that went back to a Research Triangle Park report, which I didn't have a copy of, and I have to wonder if we really got very good data on agricultural sources as emission sources in this case.

And I think it's going to come up with other PAHs as well. That's why I'm making a point of it now. We find that there's about 100 PAHs and smoke of all different types. Benzo[a]pyrene is just one, and I kind of hate to see this agricultural source thing keep coming up when, in fact, I don't think the data supports it. And really you've qualified it in other parts of the report to say agricultural and wood and other combustion sources. I think we ought to keep that in

perspective. So I guess my biggest concern is how agricultural activities are being viewed in this regard. And I've got some other information, too, but let me just stop there and hear what your response is.

MS. SHIROMA: I'm sorry, Jim. I think we'd intended to reflect that language to the board -- general language -- in these draft findings.

DR. DENTON: And also, Dr. Seiber, we have kind of two things going on here. We do have the emissions table, which we've added a footnote and which we would incorporate into your findings, but also this -- the finding No. 4 actually discusses this near source hot spot short-term study that we did, and in that study we took samples from areas where wood and agricultural waste burning occurred during the winter months. So that's what the description of this No. 4 is. That was the description of the study site and observed concentrations 10 to 17 times higher than the annual average.

So again, that wasn't meant to say -- you know, give the relative contribution to exposure of agricultural versus residential wood or combustion; it was the description of that particular study.

DR. SEIBER: Well, even in No. 3, it says, " . . . major sources in California are agricultural

burning," first, "mobile sources, rubber tire wear," et cetera -- wood combustion and so forth. I think that really ought to be burning of vegetative material. That includes grass fires, wood combustion, a lot of vegetative combustion sources. And once again, it's just -- it is just kind of a stone there, that agriculture continues to lead off in the discussion.

Let me just give you another example, back in the Part A on Tables IV-2 -- well, and Figure IV-2. It says, "Ambient concentrations of benzo[a]pyrene are higher in areas with significant sources of agricultural waste burning."

Well, that may be true, but those areas happen to be -- have other unique characteristics that might contribute. For example they're in valleys with heavy inversion. So I would expect we might have less ventilation in those valleys. They're also in valleys where grass fires, if they occur in California, tend to contribute combustion material.

So I guess, again, I have a bit of a concern with the singling out of agricultural waste burning as the source. I'm not sure it's supported by the data. If we had some good measurements that agricultural fields are being burned, then I could buy it, but right now, it looks to me like we're extrapolating over

several areas to reach this conclusion that agricultural burning is the major source.

DR. PITTS: Well, isn't there something -- as I sort of glanced -- looked through this, isn't there something that -- Peggy, that you have information on indoor levels, that when you look at the total exposure time, concentrated exposure, they appear to me to exceed what had been, quote, agricultural burning, unquote. Is that not correct?

MS. JENKINS: I think the major exposures come from things other than ag burning, although people in ag burning areas would get a fair amount of infiltration. We didn't look at exposure from ag burning indoors. I haven't looked at that.

DR. PITTS: But it is a little misleading, as I think Dr. Seiber is saying, if these are the numbers you're getting. It's important that that reflects what you found from the indoor versus the outdoor.

MS. JENKINS: Well, I think it -- what Joan -- Joan had brought this up to me the other day. Their -- some of their figures for the outdoor targeted just at sources, and that's why she, at Dr. Glantz's suggestion the other day, added the footnote to the first source table to make it -- to try to make it more

clear that they're just looking at sources there, and the exposure is discussed separately. Now, you may want some additional clarification.

DR. PITTS: You can make some additional changes in that?

DR. SEIBER: Yes, I would suggest --

MS. JENKINS: That one footnote.

DR. SEIBER: -- the word -- wherever you see "agricultural burning," you replace that with "burning of vegetative material," and if you want, you could put in parentheses, "includes agricultural, wood, grass fires," et cetera, instead of leading off with -- and the reason -- I've got a reason for this. When we get into risk management, somebody is going to pick up this report and say, "Well, we can solve this problem by restricting agricultural burning." Now, there may be good reasons for doing that, but I'm not sure we can use this report as a justification for it.

DR. PITTS: The low inversion, that's also with wood burning. I mean, indoor. That's the time you're going to get maximum indoor exposure -- and outdoor.

DR. SEIBER: That was my only comment.

DR. PITTS: Are you ready?

DR. FROINES: You're the lead on this

issue. I'm irrelevant.

DR. PITTS: John, you're never irrelevant.

DR. FROINES: But I mean you were going to raise some things.

DR. PITTS: Yes. While we're on wood burning -- I want to wait until we get out of that huddle there.

Who's calling the signals in that play? That looked good. You know, you gather around; hike.

MS. SHIROMA: We're just having a little caucus there. Okay. So yes, we can change the titles, and they really can be a much more generic title. I think the thought behind specifying ag waste burning was that was a large emissions category, but we can definitely change the titles so it's not misunderstood.

DR. SEIBER: I would just add an editorial comment that all the agricultural burning that's done in the state is legal. It's done in -- by prescription and with a certain set of laws. So it's not like it's an activity that's kind of unregulated out there.

DR. DENTON: I might mention that we did, back on our earlier table, define what -- the category agricultural and other waste burning, and we included range and forest management burning, wild fires, open

burning, waste burning, weed abatement, all those categories. But maybe we ought to rethink the name -- the title -- because it's not only ag burning.

DR. SEIBER: Right. I appreciate that.

DR. DENTON: Okay.

DR. PITTS: Would you like to make a comment?

DR. WITSCHI: Not on Part A, no.

DR. PITTS: Let me ask a question here. I'm looking at the Executive Summary, and given the new data and the information provided in the body of the report, we clearly have, for example, in residential wood combustion, for example, a major, major source of exposure to BaP as it were actually a true hot spot -- fire. Pretty good, huh? Okay. All right. All right. But no, we do. And what I'm trying -- and I don't see -- I don't see, for the other hot spot, quote, unquote, in addition, including this -- I don't see a calculation of the potential cancer cases from those hot spot, quote, unquote, sources. We come up with an extremely low level of .53 nanograms, which is a triumph of the catalytic converter in California, and that was added to the Executive Summary. That's a great thing that the board has done -- did years ago. But don't we -- we need some estimate there as to what the

exposures are. And fairly significant populations, I would imagine, are being exposed to levels -- high levels due to residential wood burning, for example.

DR. DENTON: Dr. Pitts, the study that was done was done for only a short period of time. Those concentrations were measured a couple of months in the winter.

DR. PITTS: That's right. November to February.

DR. DENTON: Right. And we don't have the annual averages to -- in fact, BaP in the summer has gone to zero, actually, because of dispersion and photochemistry and so forth.

DR. PITTS: But what about residential -- but what about environmental tobaccos? He just left. What about -- as I glanced through what Glantz had prepared on that basis on residential -- or environmental tobacco smoke, it is a year-round phenomenon. And aren't the levels of BaP high, much higher than .53 average -- much higher? Then you could take certainly the ETS component of this and make a calculation as to the -- the effect that would have on cancer mortality.

DR. DENTON: Yes, we do have information on the indoor air, Part A, as well as in the appendix,

about the concentrations of environmental tobacco -- I mean, BaP -- the contribution of environmental tobacco smoke to indoor BaP concentrations.

DR. PITTS: Well, then, it would seem to me appropriate --

DR. DENTON: What were they, five to eight times higher.

DR. PITTS: -- we should compare them to industry.

MS. JENKINS: Peggy Jenkins, Air Resources Board.

Dr. Pitts, the relative contribution to exposures under scenarios in which those indoor sources are present are in the revised table that is in your packet. It's labeled Table 5 --

DR. PITTS: I've got it.

MS. JENKINS: -- up at the top. Okay. And this is based on new data from our Northern California PAH study and also the Riverside study, and what we did, because it's very difficult to get a true handle on the -- for example, the number of homes that have smoking or wood burning going on in them at any particular time and times of year and so on, to get the duration of exposure, we chose what we thought were common exposure scenarios to try to give some idea of

the relative exposure contribution -- contribution from these sources to exposure.

So, for example, we have smoking, and then no source, which is sort of no known obvious source, and then wood stoves and fireplaces as sources. And the eight-hour exposure scenario in that table is essentially a workplace-type scenario. The 15 hours is for people who work at home and have those exposures at home. Excuse me. Work outside the home and have exposures in the home when they're there. And then the 24-hour exposure scenario is for people who are essentially at home all day. And what we tried to do there is to sort of give the relative contribution we thought that these sources make to people who have those types of lifestyle in California.

We did do a little bit of, sort of more directly, the work that Dr. Glantz was looking for in his comments for the comparative risk project, but I can assure you, we were really so frustrated by the lack of good data on rates of wood burning in different parts of the state and so on, that it really was pretty messy. And I think this would suffice. To me, this gives a little better idea of, if you have this source, here's what the relative situation is.

DR. PITTS: Well, I think it's an

excellent table.

MS. JENKINS: Thank you. We're real happy with the new data, and hopefully it's reflected in here. And again, these numbers are made under certain sets of assumptions which are discussed in the text.

DR. PITTS: I think, then, the bottom line, and this number, then, if you say -- and maybe we can get to this point that we're asking about -- indoor contribution to mortality, cancer mortality, the bottom line example. If the average indoor BaP concentration is 1.13 nanograms per cubic meter, then the dose would be 22.6 nanograms. So you can go back from the 24 hours -- you do have a number for this average exposure; right? Is that -- or is that just an example? The 1.13, is that -- what I'm trying to get at is a number times which I could multiply the unit risk and come up -- and times the number of population estimate weighted, the population estimate, that would be exposed. So is it two people? Is it 17?

DR. DENTON: About two.

DR. PITTS: Is it --

DR. DENTON: Our population weighted is -- was .53, and that's less than one per million, and this is 1.13 nanograms, so it's double. So it's about two. About two potential cancer cases per million.

DR. PITTS: Okay.

DR. DENTON: Based upon 1.13 nanograms per cubic meter.

MS. JENKINS: If you had a 24-hour-a-day, day-in-and-day-out exposure.

DR. DENTON: That's right.

MS. JENKINS: You need to qualify that.

DR. PITTS: Okay. Well, that would be -- yes. That's per million; two per million?

DR. DENTON: Per million.

DR. PITTS: And you would have to estimate how many million underwent this; right? Because when you multiply by the population, 30 million, you get 17 potential cancer cases as you calculate it. So you have to multiply a number by -- it isn't 30 million, it's -- whatever the million would correspond to.

DR. DENTON: Spending indoors 24 hours a day.

MS. JENKINS: Actually we do have a number we could use if the committee would like that in there. I would accompany it with a lot of caveats.

DR. PITTS: No, that's fine.

MS. JENKINS: But from our activity study, we do have an estimate of 5 to 7 percent of the population spends just about 24 hours a day in their

home or near their home. That -- we view that as probably kind of an upper limit, but if -- you know, we could multiply something out, if you'd like it.

DR. PITTS: I think it would be useful. It isn't a large number. It's not --

MS. JENKINS: No. No, it isn't.

DR. PITTS: Indoor versus outdoor, one does have a final bottom line, which is per individual, you have a number for it.

MS. JENKINS: Right.

DR. PITTS: A cancer risk. Okay.

DR. FRIEDMAN: But most people would be somewhere in between that --

DR. PITTS: Yes.

DR. FRIEDMAN: -- the 5 percent who spend 24 hours, and the people that don't spend any time with environmental tobacco smoke. So you couldn't just --

DR. PITTS: But you just said, and most people would lie somewhere in between.

DR. FRIEDMAN: Yes, okay.

DR. PITTS: I'm giving the conditions, and then most people would lie in between. And they're small numbers, in any cases.

Yes?

DR. SEIBER: Yes, I have a general comment

about all these combustion sources, nonenvironmental tobacco smoke, the wood burning, agricultural burning, et cetera. I think the data really stinks. There's really very little out there, and what we're doing is taking a few studies -- just for example, in that table you referenced Sheldon, and it says, "Monitoring it Phthalates and PAHs in Indoor and Outdoor Air Samples in Riverside, California." So we're taking one study at Riverside, California, and we're extrapolating the entire state. I -- you know, I think we're really in trouble -- and it's not your fault, it's just not much data there. We're all selecting the little bit of data that's out there and trying to make a big case for it, and what we ought to be doing is going back and collecting better data. So I wish the Scientific Review Panel had a way to feed into ARB's research menu and get this kind of statement known. We need better emission data.

DR. PITTS: There is a fact -- funny thing you should mention that. That was one of the positive things that came out of the dioxin report, because the data was lousy on dioxin back maybe eight years ago or so. And there was a formal motion by the SRP that funds from the ARB be allocated to develop better experimental techniques and to go out and actually make the

measurements, fully recognizing they were expensive, fully recognizing they were complex, but that these would be made.

And remember, Genevieve, that was achieved, money was put in there, and some fascinating results. We had high quality data emerge from these studies. So there is a precedent, and I think -- I personally believe this is an important role the panel can play is to emphasize a need for better data.

So if you would like to consider that perhaps at the end of the discussion, as a motion that the data -- because of the importance of the area and because of the lack of useful -- and the ubiquitous nature of the PAHs. So that would be a reasonable motion, I would believe -- to discuss, certainly.

Yes?

DR. DENTON: Peggy had a clarifying statement.

MS. JENKINS: Yes. I agree. I think we certainly can use more data. From the indoor perspective, I just wanted to make sure it was clear that the data in this table and what we're recording comes both from our Riverside study, but also from a very large 280-home study we did in Northern California. And, in fact, both of these studies are

fairly recent, just within the last few years. So certainly the ARB does recognize that we really needed to get this information, and in fact, we did the Northern California study because we recognized the one season in Riverside, without the wood burning and other sources, really didn't give us nearly the whole picture.

DR. SEIBER: Is that the Sheldon, et al.? 1993.

MS. JENKINS: '93, right.

DR. SEIBER: See, that reference isn't back here in the report. That's why I didn't see it. I assume you're going to add it.

MS. JENKINS: That's right. That's in the newer materials. We'll clean that up completely.

DR. SEIBER: Okay.

MS. JENKINS: Definitely.

DR. PITTS: Are there other comments on Part A?

DR. GLANTZ: Just for the record, Dr. Friedman has showed me how the population-weighted mean didn't have to be the median, so I will -- just for the record, I'm not worried anymore.

DR. PITTS: A general question of concern, and how I address this -- when the International Agency

for Research on Cancer produced this plastic IARC monograph, it was on the evaluation of -- this is one of the series -- on the evaluation of carcinogenic risk to humans, a series of IARC documents, the title of the document is "Diesel and Gasoline Engine Exhausts and some Nitroarenes."

And I think the thrust of this, although -- the thrust is that they give unit risks or potency factors to a wide variety of these particulate particle -- particulates, PAHs, polycyclic aromatic compounds, nitro, and oxi PAHs and so forth. They give these unit risks in the table that we, in fact, discussed at some time, but the fact is that BaP is simply one PAH, particular PAH component of gasoline and diesel exhaust, and it is essentially always in a combustion process -- as far as I know, always associated with other carcinogens that are present.

For example, as we discussed, again -- we had a good discussion on this -- in the table here in the IARC monograph, they list three compound PAHs that are probably human carcinogens -- or at least IARC 2A. In addition to BaP, there's a benz[a]anthracene and, I think, dibenz[a,h]anthrocene, if I remember correctly -- three of those that are copollutants, and they're always copollutants when you burn something. Basically, wood

or vegetation or gasoline or engine exhaust. And then there -- I think there are five 2B, which are -- that is, possible IARC classifications, possible human carcinogens.

And my concern about this is that if we focus specifically on BaP, we're clearly underestimating the risk of cancer from combustion-generated particles. Specifically, if you care -- from these various sources. And, in fact, the OEHHA has numbers. They developed numbers, and as a matter of fact, they have some in the -- I just had it here. I think it was in the Executive Summary, they point out that they have numbers for some 20 or 30 of these compounds, and that they -- if we have exposure numbers or can calculate exposure values or estimate exposure values -- because there's also a table in here, for example, that shows for two auto exhausts the relative amount -- the actual amounts of these various compounds, PAHs, that were emitted from two different gasoline engines. And so one can estimate that if BaP is one, then benz[a]anthracene might be -- it might be half as much or an equal amount or more present -- and also, of course, clearly depends on atmospheric lifetimes and so forth -- but you can sort of toss those in and say "assuming they're even equal" -- what sort of number would we get if we treated

these, say, eight PAHs that are listed as either probable or possible and multiply the amounts either in ambient air -- ideally in ambient air -- some of them are -- the ARB has measured some of these -- and then multiply those out and came out with a number. And you can put, again, a ballpark figure on it, but it would be helpful, because if -- criticism that I heard about this report, and that it was -- it was a good one, but it -- actually the report didn't reflect the amount of work that's gone into this area. I think that's one of my concerns.

You know these facts, and the indoor knows them and the OEHHA knows it, and the staff knows it. You've done these measurements. It doesn't reflect the fact that much of this data, which is important data, is available through these measurements. And I would hope to see an extension of that -- the report reflect the efforts that have gone in, and then these estimates, that it is a -- and you do state -- you inserted it's a complex mixture, and I was delighted to see that, and we discussed that, but then you can follow through, then, on some of these calculations, if that would be possible.

MS. SHIROMA: Dr. Pitts, there's actually a depositing of data of those other PAHs for which OEHHA

now has health values for or the PEFs, and Joan maybe can summarize the data that we do have, collected through our ambient network and also the data collected through the 2588 program.

DR. DENTON: Okay. We did, as I mentioned, collect -- we do have data for five other PAHs other than BaP. We only have a health risk number for one of those -- one of those, and that's dibenz[a,h]anthracene. And we did take quite an exhaustive look through the literature to see if there was anyone who had measured concentrations of these ones that OEHHA has developed these potency factors for, and there is basically no information, no ambient data out there. So that's kind of where we are as far as ambient concentrations.

DR. PITTS: Now, you could actually, though, if you know the ambient concentrations of the BaP and know the emission factors, roughly the emission factors on the major sources -- assuming they'll be roughly the same -- can you then go ahead and make an estimate, then, of what the ambient levels might be?

DR. DENTON: Genevieve's reminded me through the 2588 process we are collecting emissions information for 10 to 15 different PAHs, and those we would be getting -- we will be getting emission factors

for.

DR. PITTS: Along the line with what Dr. Seiber said, it seems to me that it's very important that -- (a) that we go back -- that we examine the list of PAHs that we're measuring, and examine them in terms of the potency of those PAHs, and -- as well as -- as well as their ambient levels. I mean, if they're micro, micro, microscopic, forget it, but if they're 10 percent of BaP or more -- pick some number -- then it would be important, along with this recommendation, that the focus then be on those PAHs specifically that have a risk in your table for one to ten, or whatever -- that they're identifiable -- be identified by IARC as either probable or possible human carcinogens.

Now, it may well be that Mike Poore might -- Mike Poore might say, "Well, they're so small we can't measure them." Okay. Well, then don't. But I suspect that some of these -- I know that some of them are going to be large enough to be measured, and it would be worth measuring. That would add to the validity.

I haven't mentioned, and I'll leave it for, I think, Dr. Froines. I haven't really mentioned the whole question of -- well, the question -- I'll raise a question. Are you going to discuss in detail ambient levels of nitropolycyclics and that information on

nitropolycyclic species? It's discussed briefly, but are you going to come up with estimates as to the --

DR. DENTON: Dr. Pitts, we hadn't planned on expanding more than we had since the focus of the report was BaP. There is some information on the mutagenicity in Part B. There's actually a whole section. And also on the nitro PAHs.

DR. PITTS: The nitropolycyclics, yes.

DR. DENTON: That's right.

DR. PITTS: Well, will that be ambient levels of nitropolycyclics, and -- that's not just the polyclyclics, but nitro-lactones and so forth? Will that then be discussed and basically the mutagenicity of ambient air that's loaded with dura -- and not be only -- with direct mutagens -- and not only promutagents, but direct mutagens -- and will that be discussed in the diesel document?

I guess what I'm asking, in a more general statement, where will we discuss in a report -- and you can even say: Fine, combustion, we'll discuss it in the report; the mutagenicity of ambient air and the carcinogens that are present among those mutagens, those that have been shown to be animal carcinogens. Will that be discussed under diesel exhaust?

DR. DENTON: We were just talking here

that we could add that kind of information to our Part A here for benzo[a]pyrene -- maybe in the exposure chapter. Go back to, as you were mentioning, the lactones, which have recently been -- have been published, that we could add additional information into this document.

DR. PITTS: On the mutagenicity.

DR. DENTON: Or on the -- what's been measured.

DR. PITTS: Yes. They've measured mutagenicities and concentrations.

MS. SHIROMA: And we would rely on mutagenicity discussion, expansion for the Part B, where there is some discussion now, and I think we would look to George and Jim on what else can be added there.

DR. PITTS: Okay. Now, that leads me to another addendum to Dr. Seiber's suggestion. I understand that -- for example, that the mutagens -- I'll just make it very quick. The major contributor to the direct mutagenicity of ambient air turns out to be -- as reported by Atkison, Arey, and their coworkers -- a nitrolactone, phenanthrene -- it's phenanthrene, a three-member ring, and you make a lactone out of it, and it turns out that's an extremely powerful direct mutagen, and it's in ambient air, and

what's come out of all this is that one actually can -- and then there are a variety of nitronapthalenes, methylnitronapthalenes, and so forth. There's a host of these that are out there, and point one is that I believe the statement was made that with the current monitoring system, one cannot monitor the semivolatile or the volatile PAHs, and yet it turns out that in terms of the atmospheric chemistry, these are the species that are predominant in forming the direct acting mutagens TA 98 and Ames assay, and they're active in other types of short-term assays.

So one of the things that really should be a recommendation, and I'd like to -- for the record -- make this clear, that one ought to modify whatever monitoring systems one is using and pick the appropriate ones -- modify these so that one not only has the high volume filter, but one has a polyurethane plug after this, and then one goes ahead and analyzes both the material on the filter, which is presumably particulate, and then the material on the plug, which is probably blown off the filter, but is also -- which is the volatile.

So you want to do this -- you need to know something about -- for example, phenanthrene, per se, and then what other concentrations of the nitro species

that are derived from, say, the phenanthrene -- that is, the lactone, I mean. This is the future. This is -- this is future stuff, but it would sure be -- I don't -- I know Mike Poore could certainly get involved with this.

DR. DENTON: And Dr. Pitts, as you and I discussed on the phone, we -- I mean, this is important. Our plan is that after this meeting and so forth, that we would talk to Mike about modifying and expressing yours as well as the panel's concerns that this addition -- these additions be added to the monitoring network, if possible.

DR. PITTS: I'd appreciate that. That would be another issue to watch over. I think that's about all I have. Whatever other comments -- I after a few -- I can communicate those after the meeting, and we'll turn the -- unless there are any other questions on Part A, I'll turn the meeting over to Dr. Froines.

DR. FROINES: Well, let me finish Part A.

DR. PITTS: Okay. That's right.

DR. FROINES: I think that Jim, probably in a more indirect way than I might do it, expressed the concerns that he and I felt. What concerns me, of course, is that we have a problem insofar as we are theoretically trying to do something about toxic air

contaminants in terms of there being a health problem associated with them, and it may be that when you get into the regulatory phase that you can use the BaP finding and the risk assessment as a basis for control strategies. But the problem we have is that the risk associated with BaP looks predominantly indoor, and it doesn't look as serious as some other compounds, because of the low total concentration. And my concern is that we end up, therefore, saying that at some level BaP, and by extrapolating, PAHs, becomes not as serious as it might be, because we don't know what the scope of the problem is.

And I think that's precisely what Jim is saying. We don't know the scope of the problem. We know what we can say for BaP, but there are a hundred PAHs for which we have no knowledge or a limited knowledge, and so we can't say what the problem is.

Well, I, frankly, don't want to sit here and have a PAH come up again and then another PAH come up again and another PAH come up again, because we need to know what is particulate matter doing to us with respect to cancer in the ambient environment, and I'm afraid that sometimes in our rush to get to individual compounds, that we are losing the forest for the trees, and that it's the forest we're concerned about, not the

individual trees.

And I think we need to figure out, and -- a way that the California Air Resources Board can develop some estimates of the cancer risk associated with polycyclic organic matter in the environment, ambient environment. And I think it's a serious problem, is my guess, and it's something that we need to think quite seriously about in the societal context. So that we're concerned about Part A is that -- about this whole document, about benzo[a]pyrene overall -- is that we're somehow focusing on a little issue, but there's this huge jungle or forest out there that we don't really speak to, and I think that somehow -- and this may not be the forum for it, but somehow we have to get to that problem. Because there are napthalenes, and when the atmospheric chemistry is such that they -- it nitrated and they then become semivolatiles and they then get absorbed on particulates -- and we don't know the concentrations on particulate -- and they're going on people's lungs, and then there are particulate nitro PAHs, and so on and so forth, and you know some of it.

So that's my -- that's what my concern is about this, is I don't know what we will -- we will confine benzo[a]pyrene to be a toxic air contaminant with these risk assessment values, but I don't know what

that has done to deal with the overall problem. And that, quite frankly -- that -- that's -- that's what concerns me about this.

And it's directly related to diesel, because when we deal with diesel, we are not dealing with individual compounds. We are dealing with a risk assessment based on another way of measuring exposure. So we have a total apples-and-oranges situation here. You're going to bring diesel to us with a different way of measuring exposure than you're measuring BaP, and somebody's going to have the intelligence to ask: How do we know in the air how much of this is diesel versus everything else? -- and what the relative risks are in the ambient environment. And I think that's a reasonable question. I suspect the industry will raise it if nobody else does.

So anyway, I think that somehow we have to get to that. So anyway, now I'll shut up.

But I had a question as to -- there's not much in here on the impact of hot spots. There's some data, but I don't know -- one question I would have is, Are there hot spots of significant concern that we need -- that need to be highlighted? That's a question. I don't have the answer. The -- that's it.

Oh, there's one other thing. I'll give you a

reference to a recent paper that we did on benzo[a]pyrene in water from storm drains, because you have a skin absorption issue as well -- people swimming in the Santa Monica Bay -- but that's pretty trivial.

MS. SHIROMA: Let me go ahead and react to your concerns, starting with the latter. We don't have data at this point for the 2588 hot spot program that shows significant hot spots as a result of BaP, although the data is being collected, and we might anticipate that that will be the case.

There are -- in Appendix A we have a list of the PAHs that are being required to be inventoried under the 2588 program, and I have a count here. Fourteen PAHs.

Historically, when we've looked at PAHs in the stationary source program, we've used the BaP as a surrogate for the PAHs, and we've looked at taking a number of PAHs where we thought that there has been at least sufficient data to where we add that mass in and apply the BaP potency to it, so that's been our and the district's attempt to try to account for the fact that there are more than just BaP-type emissions emitted from stationary sources.

What I'm getting at is that if we would go back and take a look with Mike Poore at our ambient

monitoring method, because the issue here is -- at least one of issues is that our ambient concentrations for BaP shows a low risk, despite the high potency. This has a 10^{-3} potency, which is one of the higher ones. Now, our ambient examination only looks at BaP.

I think where we were trying to get that larger view and assess what's going on is in the point sources. We have been able to look at PAHs as a complex mixture as we are with diesel exhaust because there are multiple sources of PAHs, whether it's the vegetative matter, combustion, or the fuel combustion or gasoline combustion, stationary source point source combustion. So we haven't been able to point to a single source that has this complex mixture. So we've tried to use BaP as a surrogate, and now what we have will take us to the next generation of looking at the variant potencies of those other PAHs.

So we hope to address your issue by looking again at our monitoring method, continuing to collect the data on the hot spots program, as it becomes available, review the information.

Have I answered your question?

DR. GLANTZ: I had two things. First, you know, it seems to me that anyplace you allow smoking is a hot spot. Now, I mean, it's a fact of seven times

above ambient or something, and that might be worth mentioning.

The other thing is, why can't -- and this is one of the things I wondered -- or maybe we'll deal with this in Part B. I mean, you've come up with these relative potencies for the other 14 or however many PAHs that you're looking at here. I mean, why didn't you try to come up with another risk calculation that accounted for the other -- the complex mixture that said, okay, we're using -- based on exactly the logic you're putting forth -- we're using BaP as our marker. We're also using BaP as our index compound for coming up with relative potencies for at least some of the other PAHs, and why not also then come up with an overall risk number for combustion stuff? Because at least for the organic matter combustion I'm familiar with, which is cigarette smoke -- okay? -- people have actually looked, and when you burn cigarettes or marijuana or lettuce, for that dried lettuce, you end up with about the same kind of smoke in terms of the PAHs. So it's really sort of generic burning, dry organic matter, which gives rise to these mixtures.

So I mean, it seems, based on my limited knowledge, I think you might be able to come up with at least some sort of global estimate that includes the

other -- the other things that you have relative potencies for. And in that case then you should expand the focus of the report a little bit to include PAHs generally.

DR. FROINES: I'm not arguing for changing the report, personally. Stan may or others may. But it's interesting that we have done risk assessments on environmental tobacco smoke as a totality of complex mixtures, but here we live in the South Coast Air Quality Management Basin, but we don't have the same risk assessment for particulate matter in Southern California, for example, or the Valley, or what have you. And that -- and it seems to me that that's really the question, is, we actually do -- with diesel and with environmental tobacco smoke, we have risk assessments, but here we're dealing with benzo[a]pyrene as an individual chemical, and it seems contradictory.

MS. SHIROMA: Well, with ETS and with diesel exhaust we can pinpoint the source. With the BaP and the other PAHs, we're looking at things as diverse as coal combustion, say, from a cement plant versus agricultural burning versus gasoline powered vehicles. And so -- but I understand you're asking that large question that if you're looking at the ambient air overall, what is that total risk posed to the public?

We haven't gotten to that level of sophistication yet, and we've tried to tackle the PAHs through BaP.

DR. FROINES: But if you live in Los Angeles, is it a problem to breathe the air because of PAHs? I mean, I don't know. That's why I'm asking. It seems to me a relevant question.

DR. SEIBER: You mean, as opposed to all the other things that are in the air?

DR. FROINES: Yes.

DR. SEIBER: That's a good question.

DR. DENTON: The one concern that I have is really our lack of exposure data. These things could be incredibly potent, and yet we really don't know air concentrations. And George and Jim have developed these new PEF values. But again, you know, what kind of levels are we talking about, unless you really know what kinds of exposures are? And I assume with the ETS that there at least were some relative ideas of how much of those compounds were in ETS, so you could come up with some kind off a conglomerate.

DR. GLANTZ: No. But the point I was making in raising ETS is that the various things that I have seen when you look at the PAH contents of -- or relative PAH contents of ETS, it's the same as a lot of other burning of organic materials, that there's nothing

particularly unique to tobacco in connection with the PAHs. It's really just inefficient combustion of organic material. And if that's -- if the general mix of PAHs that you get -- maybe Jim could address this -- is not too variable across different kinds of inefficient burning of organic material, then maybe you could come up with some sort of average mixture that you could then use not just for ETS but generally.

And if you look at Table III-1 on page A-7, I mean, half -- more than half of the stationary area sources that you're looking at is agricultural and other waste burning, or whatever you want to call it, and the -- if you then add in the -- sort of the mobile sources from autos, you have probably got two-thirds just in those two items of the total -- of the total emissions outdoors. And so you don't -- when you were saying earlier, well, but you've got coal and you've got this and oil and these other things, in fact, two -- two sources account for the great bulk of the emissions, and so it may be that you could address the mixture.

DR. FROINES: Can I --

DR. GLANTZ: Although if the panel doesn't want to push you in that direction, I don't know if you want to.

DR. FROINES: Jim, I'm currently

chairing -- the --

DR. SEIBER: Yes.

DR. FROINES: -- and I was going to propose that we go back to Jim Seiber, who was raising research questions, and -- Jim has raised research questions -- and in a sense I think that these questions have to be, in part, resolved outside of this quasi-regulatory process. I mean, this isn't -- I served on the Health Effects Institute expert panel on polycyclic organic matter, and so I know -- I mean, there are a lot of scientific issues that are unresolved, ranging from ingestion of PAHs to inhalation, atmospheric transformation, what have you.

So I think we should probably move ahead, and I think we should put this issue aside. But I think as a panel we should make a recommendation that says, we need to address these uncertainties in the polycyclic organic matter and ask the ARB to pursue it in a -- both a research and regulatory content.

DR. PITTS: On that note I think -- I've just noted the time here -- let's do that. I think that's a good point. We'll do that afterward.

We have an option. We can take a ten-minute break now and come back and go through Part B after the ten-minute break, or we have an option of going to

lunch. Now, some of you -- you have a 3 o'clock plane; exactly. That's why --

DR. FRIEDMAN: I have a 2 o'clock plane.

DR. PITTS: Two o'clock?

DR. FRIEDMAN: Yes.

DR. PITTS: Then -- well, we'll have a late lunch. Is that agreeable with the rest of the panel? But we should take a ten-minute break now, and then -- at least I should. And --

DR. GLANTZ: Before we do that -- I mean, so what's the -- where do we leave things on Part A?

DR. PITTS: Well, are there any other comments on Part A that we'd like to get out?

DR. SEIBER: I just want to get one comment out -- I'm going to forget it during the break -- that there may be a time when there's just not enough information to go through this process and have something meaningful come out the other end. Is that kind of what we're saying? And even though the process can go forward, the data that's gone in is just not sufficient. And we're kind of -- in a way we're wasting our time. Maybe we're premature or half-baked in some of our assessments, because the data base is not there.

DR. FROINES: Well, I think we can do benzo[a]pyrene fine. I mean, it seems to me that's a

reasonably easy issue. I think Jim and I were saying that we're not asking the right questions about benzo[a]pyrene, and that's a different issue.

DR. WITSCHI: Well, you know those 17 cases have to go through a lot of potential.

DR. PITTS: Are there other comments? Well, shall we then conclude that we've discussed Part A, and we will now take a ten-minute break, or so, and then we'll come back and start Part B with John.

(Brief recess was taken.)

DR. FROINES: Let's get back to work.

DR. PITTS: We will reconvene, and the next topic will be Part B of the document, and I'll ask Dr. Alexeeff to present some material for us.

DR. ALEXEEFF: My name is George Alexeeff from the Office of Environmental Hazard Assessment. And the chief author of our document is Dr. Jim Collins, and he will present a brief overview of how he put the risk assessment together.

DR. COLLINS: Okay. So now we're moving to Part B. Benzo[a]pyrene is probably the most well studied of the polycyclic organic matter, or PAHs. It's been shown to cause -- it's an unknown mutagen in bacteria and mammalian cells. It's been shown to cause cancer in at least four species, at least four target

organs, and by many roots of administration, this is the parent compound.

(Overhead presented.)

The first reaction that occurs by P450 isozyme is epoxidation in the 7,8 position. This is opened up by hydratase. And there's a second epoxidation in the 9, 10 position, and this seems to be the most reactive species, reacting with the amino group of Guanine to form a DNA adduct.

(Overhead presented.)

There are a variety of studies. Probably the most have been done in skin. However, for the purposes of the risk assessment, the two most complete studies is a study by Neal and Rigdon of gastric tumors in mice that were fed benzo[a]pyrene. One of the problems with the study, it was really not a lifetime study; however, there was a dose response to benzo[a]pyrene.

At the high doses, because of the way the multistage model works, these three highest doses could not be fit by the model; however, they certainly add to the weight of evidence that benzo[a]pyrene is causing cancer. This study was, until recently, the best basis of the EPA's for discussion for benzo[a]pyrene and still constitutes a part of it. It's also the study that was used by Proposition 65 to determine air potency and is

the basis of their oral no significant risk level for the purposes of Proposition 65.

The inhalation study that was also used by the EPA was one done by Thyssen, et al., in hamsters -- in which hamsters were exposed to benzo[a]pyrene three to four hours a day --

(Overhead presented.)

-- for up to about a year and a half. There were no tumors in the background. There were none at the 2.2 milligrams per cubic meter exposure, 9 out of 26 animals at 9.5 milligrams per cubic meter, and 13 out of 25 at 46.5 milligrams per cubic meter.

These animals died relatively early, and they had a shortened life span, and they could not be fit by the multistage model. But again, it adds to the weight of evidence for respiratory tumors.

(Overhead presented.)

This is a summary of the values from the risk assessment. This would be the oral potency again. This number is the one that's being used by Proposition 65. For their purposes it gives an equivalent inhalation unit risk of 3.3×10^{-3}. This is the value that the EPA previously proposed, 1.6×10^{-3}.

We used the same data and decided that the hamster inhalation rate that the EPA was using was

enormously low, and we partly got this information from the state of New York, which was also looking at benzo[a]pyrene. So our recommended unit risk value is 1.1×10^{-3}, with a range from here to here (indicating) -- the other fairly decent study that's available.

We also attempted to develop unit risk from some intratracheal studies. Although they are not the same as the respiratory study, they do -- material is definitely delivered to the lung, and respiratory tumors are seen, and the potencies are within the range gotten with -- by inhalation; not surprisingly somewhat higher because you know that the BaP is getting into the lung.

(Overhead presented.)

Okay. Now, as Dr. Pitts has pointed out several times, benzo[a]pyrene is only one of many PAHs or PAH derivatives that are grouped by IARC and by the USEPA as carcinogens. He mentioned benz[a]anthracene and dibenz[a,h]anthracene. IARC also sees these -- the only mixture is carbon black. The others are all individual compounds. The ARB is able to monitor for, I think, two of these benzochloroethenes. We have these other PAHs and then we have several nitro PAHs that are all considered that there's at least animal -- sufficient animal evidence that these are carcinogens.

So -- yes?

DR. SEIBER: Mineral oil? Is that a mistake or --

DR. COLLINS: Some types of mineral oil.

DR. SEIBER: It must be a certain type --

DR. COLLINS: Yes.

DR. SEIBER: -- not a general run-of-the mill, refined mineral oil.

DR. COLLINS: It's a type of mineral oil, and I'd have to --

DR. BYUS: PAH is removed. Ink is the same way.

DR. BECKER: Jim, I wanted to ask you --

DR. COLLINS: Yes.

DR. BECKER: -- on the other break there, one of the documents -- the document -- the animal relation studies then refer back to human studies and really look at complex mixtures to assume how much is absorbed. So when you take a person who's inhaling benzo[a]pyrene, your assumption is it's completely absorbed in the lung for risk assessment; is that right?

DR. COLLINS: No. This is based on external dose -- external dose. We're not looking at metabolized risk, we're just taking based on an external

dose of this amount of material, what's the cancer risk.

DR. BECKER: 0.53 nanograms per cubic meter?

DR. COLLINS: Yes, is the external exposure. And we did our animal studies based on the external exposure amounts. We did not make assumptions that there might be different absorptions between animals and people. That hasn't been done. It could be done. That's another way of looking at it. Internal dose rather than external does. So this is based on the external exposure of the compound.

DR. BECKER: Those animals with inhalation studies, where the tumor --

DR. COLLINS: Yes.

DR. BECKER: -- and the assumption in humans is that -- human complex mixtures -- is that they're absorbed completely from the lung; is that correct?

DR. ALEXEEFF: The assumption is that whatever the absorption rate was in the animals, it's the same absorption rate in humans, but we didn't come up with the specific absorption rate for --

DR. BECKER: Because the studies that you cited are for humans exposed to tar and coal and

everything else, and then you said there's mutagenic material in urine and there's epidemiology support for that, but that's -- those were complex mixtures.

DR. ALEXEEFF: Correct.

DR. BECKER: And then you made the assumption that -- because, I mean, the dose of .53 nanograms per cubic meter is a very small dose in the environment, and exactly how much of that gets absorbed is critical to what the real risk is of cancer.

DR. ALEXEEFF: Right. Right. But it's -- in terms of our unit risk estimate, the amount that the animals absorbed, and which our unit risk is based on, wasn't measured.

DR. BECKER: Right.

DR. ALEXEEFF: So we -- and the amounts that humans absorbed isn't measured. So we're assuming that they're in the same ballpark, whatever it is.

DR. BECKER: I see.

DR. COLLINS: The EPA has been --

(Overhead presented.)

-- much less expansive in identifying PAHs, as opposed to IARC, where there's 15 or 16. Here we can see there's only eight that the USEPA recognizes as carcinogenic, and there's a bunch that they say there's not enough evidence. Chrysene -- there's one compound

here that -- I believe it's chrysene -- that is not in IARC 2A or 2B, but the USEPA considers this adequate evidence of possible human carcinogen.

So what do we do about all of these other PAHs? One thing that the USEPA has --

(Overhead presented.)

-- started to do -- I think they've been looking at it for probably 15 years -- is to come up with toxic equivalency factors similar to what has been done with dioxin. So we've attempted in this document, under the influence and encouragement of Dr. Froines, to come up with some relative PEFs. And this is what our -- what we'd like to do to select the PEF if we had the data.

One is we'd like to do a complete quantitative risk assessment, if possible. Unfortunately, the only chemical for which that is available is basically benzo[a]pyrene.

The second is an expedited quantitative risk assessment. The people who do Proposition 65 have looked at a lot of PAHs, and we thought that at least four of what they did -- four of the PAHs they looked at -- the data was adequate that we could bring them into our scheme.

The next thing that we were interested in was

tumor data from inhalation exposure. Basically there's none other than for BaP.

Next, tumor data from intratracheal or intrapulmonary administration. There are a variety of PAHs that have been tested that way.

Fifth was tumor data from oral administration. There's several of that.

Sixth, tumor data from skin painting studies. There's lots of PAHs that have been tested by skin painting.

Seven, tumor data from subcutaneous or intraperitoneal administration.

Low down on the list are genotoxicity data and structure activity information.

For the scheme we're going to show you today, basically only one chemical has been done on the last two, and basically by No. 9, by structure activity -- similarity to its sister compound.

(Overhead presented.)

These are the four PAHs that we found in Prop 65 that we felt we could use. One was dibenz[a,h]anthracene, which is an IARC 2A carcinogen. Five was -- 5-nitroacenaphthene, which is an IARC 2B. The other two chemicals, 7,12-dimethylbenzanthracene and 3-methylcholanthrene, although they're well known, are

graded neither by IARC nor by the ESEPA; however, the panel that administered Prop 65 found that there was some authoritative body that identified them, so they accepted these as PAHs -- as PAHs that they could develop a no significant risk level for.

Here is the potency that they derived, and we've devised a unit risk assuming that the ratio of this potency to BaP, that the unit risk would have the same ratio.

(Overhead presented.)

The biggest attempt at coming up with PEFs has been done by Clemment, and they did this for -- I think it was originally the Electric Power Research Institute. They looked at several sources of data in the literature. I think at one point they submitted this to the USEPA, and the USEPA have more or less been sitting on it for the last four or five years.

Some of the data that's in this table we actually used and -- for individual compounds. Others -- some of the other PAHs we had to develop our own numbers. And basically this is -- these are the chemicals --

(Overhead presented.)

-- for which we have selected PEFs. Benzo[a]pyrene as our index compound. You can see that

a couple of the chemicals the ARB has acceptable monitoring methods for. Others were IARC 2A and 2B carcinogens. At one point we included some Class 3 carcinogens, but the toxics -- the Department of Toxic Substances Control felt it was inappropriate to include chemicals that had not been formally identified as carcinogens.

DR. SEIBER: Are these all factors of 10? In the previous one it looked like they're --

DR. COLLINS: Well, this is our scheme --

DR. SEIBER: Is this just a simplified thing?

DR. COLLINS: Well, partly, and basically it gives some indication of the uncertainty. They tried to come up with two digits, like 2.1, like you really can be real confident in that number. The dioxin TEFs were done by factors of ten, and so on and so forth.

DR. ALEXEEFF: This was done intentionally, and the reason was to clearly indicate that we have less certainty about these numbers. We felt if we -- if we didn't round them to these nearest tenfold areas, that people would think that possibly we had some specific animal data and we calculated a reasonable unit risk or a risk similar. So we did this,

you know, just to sort of express the uncertainty.

DR. COLLINS: And some of the chemicals you might have five or six data sets; some you might have one.

Now, even with this, this is still just a beginning --

(Overhead presented.)

-- because here is a list of IARC 3 -- of IARC Class 3 -- Class 3 PAH 3 derivatives, derivatives for which there is limited or inadequate evidence. And I think one of the things to be aware of is in many cases there's not a lot of motivation to go out and get the evidence. Certainly the industrial people are not motivated to get more evidence, because if they find out something positive, then it's going to be declared a carcinogen.

So as Dr. Froines mentioned, there are many, many chemicals, and here are some that could well be carcinogens if there were just more data available.

DR. FROINES: But this goes back to the Part A thing where it would be very nice to have some data on exposure just so we have some way of studying up some sort of reasonable priority list to do an evaluation.

Once you start feeding rats these things --

you know, you'd better be sure that there's some of it out there in the air before you start spending a lot of money doing toxicology.

DR. PITTS: I might just comment that the El Bayoumy -- the group, you know, the American heart -- Valhalla -- and they're, you know, world authorities and study cancer potencies on animals. Recently El Bayoumy had a paper showing the -- they said the 6-nitrochrysene with 10 -- ten times BaP -- and interesting, they said that this was -- they found in newborn mice the most powerful carcinogen they've ever tested. That was in the journal article that was out yesterday.

And as John points out -- a good one -- I think it has been seen in diesel exhaust -- I believe by Scheutzle at Ford -- but I think it's a very small amount. But that's the sort of thing, when you see a 10, you'd like to know -- yes, it's been identified, but it's, I think, very small. But that's the kind of information from the other perspective. You have an incredible potency, but a very small -- probably small concentration.

DR. COLLINS: We don't want to take this scheme and etch it in stone, you know, on a Hollywood hillside, but this is an evolving process, and this is what we're presenting today.

DR. PITTS: Well, that's fine.

DR. FROINES: And our hillsides are all cracked.

DR. PITTS: Cracked or burned.

DR. COLLINS: And so just as the PEF for the dioxin, there's some rumors and sort of shifting to try to change those, that these are what we're representing today, and hopefully as we get more information, we'll be able to come up with some -- we may have to shift some of these numbers.

So that's all I wanted to present, and it's all written in the document. There's documentation for all the numbers, and --

DR. ALEXEEFF: And we received really just one additional public comment from WSPA, and it's a comment which they made in our previous comment period, and that is their request that we include the maximum likelihood estimate along with the upper confidence limit. In this case the maximum likelihood estimate for this calculation is zero, because it's very unstable, and so it's there --

DR. PITTS: Would you explain for us this atmospheric -- what you mean by maximum likelihood estimate.

DR. ALEXEEFF: Well, it's a statistical

type of average that comes out of this linear regression for the GLOBAL86. But it's not -- some people have thought it was an average, but as people have looked at it more, it's not really a good measure of central tendency. It's -- the best way I can understand it, and I've tried -- I've asked many statisticians to explain exactly how -- you know, in lay terms how this would work. And the best explanation I got was if you're familiar at all with Monte Carlo simulation, the idea is that where -- based upon the information that you have, where would the next middle point be, if it was your best guess. And that kind of an estimation process, apparently.

It is very unstable, because we've showed that on the acid aldehyde document, for example, by changing one number in one of the dose responses, the number will change dramatically -- you know, tenfold. And the same thing is here. If there was one more animal that had responded at the lower dose, it wouldn't be zero, it would be about one-quarter of the upperbound estimate.

So there's -- as a result of this, there's been a lot of desire to come up with a -- the essential tendency estimate, and that's something that staff and OEHHA and we at USEPA have looked at, but there hasn't

been one that people have agreed on. There's a number of ideas out there.

But the GLOBAL86 model, which is the computer program that everyone uses in the regulatory arena, produces this MLE estimate. So it's kind of always there, so we always record it. But -- and so that's kind of one of the issues. But I think --

DR. FROINES: I understand that it is reported in your document.

DR. ALEXEEFF: It is reported in the document. They would like us to report it every time we mention 95 upper confidence bound. But these numbers also add at the same time to all the tables and the discussion paragraphs and the Executive Summary, because -- they said it actually provides more information in certain aspects. And I disagree. I think in this case it really shows that that particular number is not that helpful. But as we say, we have the document. It's not as if we are hiding information.

And the other study, the oral study that is also presented, which comes up with the unit risk similar, has a maximum life estimate -- I think that's about a quarter -- right? -- a quarter of the upperbound estimate as well.

So it's -- it's, you know, saying -- I don't

think the risk from benzo[a]pyrene is zero. I don't think that's a useful thing to say it is. It could be. I think there is a risk there. So --

DR. FRIEDMAN: Seventeen cases, 30 million people in a lifetime, is pretty damn close to zero, though.

DR. ALEXEEFF: Well, that's when you look at the -- the risk on the population based on ambient levels. And I can agree with that, if that is a variable risk, but in terms of whether the compound itself has -- you know, it's likely to be a carcinogen, I think that that -- that it's likely to be a carcinogen. There's a chance it's not a carcinogen.

DR. FROINES: See, that's what Gary just said, is precisely what I think is a matter of concern for Part A, because he just said, "It doesn't look very important to me." I mean, I don't think that's really what he necessarily said.

DR. FRIEDMAN: That's what I said.

DR. FROINES: And -- but it has -- it's a compound with significant potency, so its low risk derives from the exposure, not from the potency. So that we misrepresent the risk when we don't take into account the human exposure. Anyway . . .

DR. BYUS: I agree. I agree with what you

just said. I think there is abundant evidence that this is a carcinogen, genotoxic, and there's a lot more even than is in this document. A lot of work is going on with the adduct formation and specific genes and really trying to identify -- in terms of structure activity as well, in terms of trying to identify mechanisms. And hopefully in the future maybe there will be some real ways to estimate potency based on the exact gene targets or at least certain atoms, that they have certain areas of geno, that they be more sensitive to mutation or atom formation, or may actually help us with the dosage calculations, potency values in the future.

I think clearly it's a carcinogen, and whether it's a major problem based on the exposure part of it is another story. The lack of human data to identify it as a carcinogen doesn't bother me at all for this compound. I mean, not one bit. Not one bit.

DR. PITTS: Certainly, if you'd worked in the shale industry back in the late nineties, and so on, there's no question about it. It was called the carcinogen, identified in 1993, shale oil -- determined the structure, and the U.K., and the average -- but you mean -- just one quick thing.

Let me just say, if you did the MEL on this -- the MLE on this, and it comes out zero, and does

zero mean that there's no problem, if you do it this way?

DR. COLLINS: No. No.

DR. PITTS: Didn't you say earlier it came out zero?

DR. COLLINS: The Q1 is zero.

DR. ALEXEEFF: The upperbound risk -- you calculate the upperbound, the 95 percent upperbound confidence limit, is the number we presented, 1.1 plus or minus --

DR. PITTS: Yes, I have that.

DR. ALEXEEFF: The maximum likelihood estimate for that same study is zero.

DR. PITTS: Does that, by definition, then mean that it's not a problem? Is that right?

DR. COLLINS: No. It just means with a hockey stick curve. That's all it means.

DR. ALEXEEFF: What that means is that, as far as I'm concerned, is that the maximum likely estimate is very unstable.

DR. PITTS: Well, I understand unstable, but I'm not sure what a zero meant or if it came out some other number.

DR. ALEXEEFF: Um-hmm. Usually the -- it also reflects on the quality of the data set.

DR. FROINES: George, you have a maximum likelihood estimate in this document.

DR. ALEXEEFF: Yes.

DR. FROINES: Page 7-17.

DR. ALEXEEFF: Yes.

DR. FROINES: So, Jim, when you get to that, you get even more confused, because that says 4.1×10^{-7} maximum likelihood estimate.

DR. COLLINS: When you do the data, you're Q1 is zero. There's a Q2. So the Q2 is not zero. So when we think of an MLE, we think they're talking about the Q1, which is zero, and they like to think, you know, the risk could be as low at zero. And the Q1 being zero is an artifact due to the shape of the curve.

DR. FROINES: I understand. I understand that. I'm saying that to the -- if one read this record, you would find a lot of confused people who weren't familiar with this kind of terminology, because you have MLEs in here, and then you have discussion of Q1s back further in the document. That's all. That's my only point.

DR. PITTS: Okay. Go ahead, George. In the interest of time, we'll let this pass.

DR. ALEXEEFF: Okay. This was a separate comparative study of different models, so these really

are not the risks that we're using in the risk assessment. It simply was comparative, to compare different types of --

DR. COLLINS: And it could be deleted because -- it's just that we've used that type of thing in the past. So if it confuses the issue, it could be deleted.

DR. ALEXEEFF: That really is not relevant to the actual risk assessment.

DR. FROINES: I was sort of going around the room, starting with Craig, but let me just -- I think that would be good to delete, because we haven't been putting Log-normal or Mentel-Bryan risk model selections for -- since we did benzene, and all of a sudden it appears here 13 years later.

DR. COLLINS: Yes. I think it's the ethylene oxide.

DR. BECKER: Yes, it was the ethylene oxide one, because somebody asked me about that.

DR. FROINES: Let's go back and try to speed up the process.

DR. BYUS: That's the only thing I wanted to say.

DR. PITTS: I think in the interest of time, I suggest perhaps we do Gary and Chuck, because

they have a 2 o'clock flight, and it's 1:25. Could we ask them for their comments now?

DR. FRIEDMAN: I have no comments on Part B.

DR. BECKER: I think it was like the emperor has no clothes in the way that the document comes, because you get a sense that the dose isn't very great, and then I was concerned that we wouldn't know how much is absorbed. But from this process, this is the most convincing carcinogen by the standards of the other agents. So I think -- I don't have any other comments. I think the document reads very well. It's very clear. And by this process at least -- I would think it was an excellent discussion, but I still think our charge with this document is that we declare this a TAC, and there's no doubt about that.

DR. WITSCHI: Yes. I have a few things. First, a trivial one, at least in the findings. It says benzo[a]pyrene alkylates DNA. Isn't the term aerolate?

DR. ALEXEEFF: It's probably not alkylate. It's not alkylate.

DR. WITSCHI: It's not alkylate. Okay. I would like to turn to page 5-11 and revisit the combined exposure with other chemicals.

DR. ALEXEEFF: I'm sorry. Which page

again?

DR. WITSCHI: 5-11. There is this myth that SO_2 enhances lung tumor development by benzo[a]pyrene. It's a myth. The paper by Laskin was never published in the open literature. It's a symposium abstract. The paper by Pauluhn is a one-page abstract, too, and a definite study which was done on SO_2 and benzo[a]pyrene was done by Gunnison in 1988 or 1989, and it is totally inconclusive. It doesn't show what you are talking about.

DR. ALEXEEFF: Okay.

DR. WITSCHI: There's no evidence for this interaction. And the Godleski paper is misrepresented because the Godleski paper says that at least initially, at the coexposure to SO -- or to sulfate inhibits tumor development.

The reason why I'm bringing this up is because there is really this myth of common air pollutants enhance lung cancer in man, and if you look at the experimental evidence, there is none for (incomprehensible). You can find whatever data you want to show this. So I think either you go to the Gunnison paper, which has some shortcomings too --

DR. COLLINS: How do you spell it? G-u-n-n-i-s-o-n?

DR. WITSCHI: Yes. He repeated the Alaskan study, and nothing came out of it.

DR. ALEXEEFF: It looks like we could just delete this paragraph.

DR. WITSCHI: Yes, I would suggest you delete it.

DR. FROINES: Also, your Pauluhn's, et al., study is not in your references.

DR. COLLINS: It is in the reference. There's not a space between the previous reference.

DR. FROINES: Okay.

DR. COLLINS: It's on page 8-14. I had the same problem.

DR. FROINES: I see. It is a one-pager.

DR. WITSCHI: I once talked to Pauluhn, and he never had the study published. You know, the evidence is not there, but he abstracts it. So just forget about this.

DR. ALEXEEFF: We'll just delete that paragraph.

DR. WITSCHI: Yes. Okay. The next problem I have is a -- if I understand the document correctly, most of your potency and all these kinds of things came from the mouse study -- the gastric cancer in mice, or at least lots of the things you did.

DR. COLLINS: You're talking about the PEFs?

DR. WITSCHI: Yes. No, benzo[a]pyrene.

DR. COLLINS: Oh, for benzo[a]pyrene. One is the gastric and the other is the inhalation in hamsters.

DR. ALEXEEFF: That's one of the key studies.

DR. WITSCHI: I would go onto the record that this key study is totally unacceptable, as far as I'm concerned. Let me just read two things out of the message. "Male and female mice, 17 to 180 days old, were used." I mean, that's lousy. That's not the standards of today.

The other one, "The stomachs were carefully washed with surrounding water and examined microscopically for tumors; select specimens were fixed for histopathology." I mean, you know, benzo[a]pyrene, the most studied compound, and yet for coming out of things, you have to rely on a study which is totally unacceptable as far as carcinogenics is concerned. It does not make sense.

DR. ALEXEEFF: Right.

DR. WITSCHI: Then in doing this, did you in your calculations rely on the higher doses which EPA

kicked out?

DR. COLLINS: No, we did not rely on those higher doses.

DR. WITSCHI: Well, okay. So we are talking about something, all those elaborate things coming out based on a total of one, two -- six tumors.

DR. ALEXEEFF: Um-hmm.

DR. WITSCHI: And then you come up in our findings, which I'm not going to sign off, with the statement that based on this, the cancer burden is estimated to be 17 potential cancer cases. I mean, it doesn't makes sense.

DR. COLLINS: They're based on the inhalation study.

DR. WITSCHI: That's based on the inhalation study, but really to come up with those, it's a nonissue. I agree it's a carcinogen, but I mean, to come up with what we have or what he used, this biological data showing it's an end carcinogen, coming up with dose-response and so on, totally inadequate study, I think that's not -- I know you can't do otherwise, because there's nothing else around, but I don't think it's the thing to do.

Something I was also wondering, which I might have missed -- two or three times. You know, in the

findings you mentioned that the epi we really have from human cancer from benzo[a]pyrene exposure are roofers to coal converters and these kinds of things, but in the document those studies are not analyzed. Did you do this on purpose or?

DR. COLLINS: I think the ARB staff took those statements right out of the IARC, to use.

DR. WITSCHI: Yes, but see, to me, from what I know about benzo[a]pyrene carcinogenesis, you know, everybody, the only evidence here really to people are the roofers and the coal converters. So I think those studies ought to be at least discussed in this document.

And I'm also not so sure -- now that one, I didn't know whether you are up-to-date with the studies coming out of Finland with Perera and looking at the BaP adducts in foundry workers, all these kinds of things. I think there's something more recent than the Hemminki study in 1988.

DR. COLLINS: You have to understand that this document was submitted to the ARB in 1989.

DR. ALEXEEFF: But it's been updated.

DR. COLLINS: But it's been updated, mainly for the PEFs.

DR. WITSCHI: Yes.

DR. COLLINS: And we didn't look at human studies.

DR. WITSCHI: Yes. The last thing, and this is really something for the committee going to discuss this now. The CAPCOA report has come out -- you know, the academy committee -- on how to do risk assessment. So there are really two things which are emphasized, and one of them is that -- and it's in the press release, which is at your (incomprehensible word), and I think what one of the conclusions of this report was:

> "When EPA reports estimates of risk to government officials and the public, it should present these estimates not as a single number or percentage, but rather in ways that reflect the amount of uncertainty associated with the risk assessment process."

So I do not think we can get along anywhere in our findings by just -- like we have at page 12 in the present findings. I don't know how to handle this, but I don't think we can get away with that one anymore. That's the new thing. You couldn't have known. It was just released three weeks ago. But we have to think that one over, how we want to go into that one.

DR. SEIBER: Yes, I had the same comment. I thought --

DR. PITTS: Let me just -- excuse me, Jim. We have members that have to leave.

DR. SEIBER: Oh, okay.

DR. PITTS: Let me ask one quick question, then. Given the interactions that are going on, it seems to me that rather than trying to work out an acceptable set of findings at this time, that in fact we go back to the staff and ask them to make the appropriate modifications as per our discussions today, as we did in lead, and then produce a set -- a new set of findings. We'll work with them on that. And then have that on the next meeting. Would that be satisfactory? Because I would like you people here -- for the findings here.

DR. FRIEDMAN: I really appreciate that, and I'm sorry to have to leave.

DR. PITTS: That's fine. We understand. You have to go, too, don't you?

DR. WITSCHI: No. I have a 3 o'clock.

DR. PITTS: Okay. Would that be acceptable to the panel, the suggestion that we do that? Fine.

DR. BYUS: Let me ask a question about the

potency values on these animal studies. I know I'm much more familiar with the skin painting and the initiation protocols where I know -- I mean, I just have more experience with that.

And I know you have a table in here where you did relate potencies for the various PAHs with initiation promotion versus the other animal studies, and it didn't look to me that far off. Is that -- I mean, is that a true statement? I mean, do these potencies hold up pretty much the same? I mean, granted, this is a promotion study where you apply a very low dose of carcinogen, benzo[a]pyrene, and you follow it up by repeated treatment of other compounds. I know it's not exactly --

DR. WITSCHI: No, no. In many of those skin painting studies, they're -- usually benzo[a]pyrene was used as a control. So if you go to the literature -- there's an enormous literature on skin painting. If you pull some different studies, the control values together, you probably might get some -- I wouldn't exactly say there was a response, but you might get some information about preparing the wrong dose in the skin.

I mean, I feel sorry for you guys. You know, I know that those mice out in Texas is the only

carcinogenic study that was done. That's what everybody knows is a carcinogen.

DR. ALEXEEFF: Yes. This is an interesting issue because we requested NTP study benzo[a]pyrene years ago, four years ago, but their opinion is that everybody knows it's a carcinogen, why should we waste our time?

DR. WITSCHI: It's not quite true. I once tried to get the mouse lung tumor assay of (incomprehensible word), and the good news was it wasn't the carcinogen in the mouse lung tumor assay. The bad news, of course, was that the mouse lung tumor assay is a very bad bioassay for carcinogens, so . . .

DR. FROINES: Jim?

DR. SEIBER: Yes. I just wanted to echo to Dr. Witschi's comment about uncertainty, that now that the CAPCOA committee is out -- the report is out, that we ought to consider that recommendation. I think that is the most important recommendation in there, that when we give values to regulators, that we always express the uncertainty plus or minus in the numbers.

DR. GLANTZ: Well, I don't know. I mean, this has been a continuous theme on this committee, and I think we have tried to give them some sense of the uncertainties, and we've -- what we've sent up to the

board. I mean, I haven't read these specific findings, but I mean, every one I can remember -- I mean, there was some indication of uncertainties. I mean, it may be that the National Academy's catching up with the handle. I mean, I haven't read what's in these suggested findings, but I mean, I -- to me, when I read the press release, I mean, it seemed to me that they were recommending that EPA do things the way we do -- which actually brings me to another point. Not to get off the subject, but I have heard rumblings that some people are saying, Why do we do things differently than the EPA? And I would like to transmit it back to the powers that be at the Air Resources Board that we do them -- when we do them differently, it's we're doing them better. But anyway -- actually, I would like to see a copy of the NAS report. I mean, is that possible?

DR. PITTS: Yes. Why don't you go ahead and send copies to the panel. Will you?

MR. OULREY: We're going to send it to the whole panel. We were going to bring it to the meeting, but we thought, Why let you guys lug them back?

DR. PITTS: We appreciate that.

DR. GLANTZ: I don't feel bound by anything it says, but it would be interesting.

DR. FROINES: Since we have a disagreement here, could I ask George to arbitrate it. Isn't OEHHA working -- isn't Cal EPA and OEHHA working on risk assessment guidelines at this point?

DR. ALEXEEFF: Yes.

DR. FROINES: And in doing so, are you going to address -- you see, it's one thing to say, "Let's look at uncertainty"; it's another thing to say, "What do you mean by that?" That's not a trivial question, clearly. In perchloroethylene you could say it's a 3 percent metabolism versus a 25 percent metabolism for bioactivation. That's one kind of uncertainty, but there's a whole host of other things as well. And so I don't -- I agree more with Jim, that I don't think it's inappropriate -- that it's appropriate to have uncertainty, but I think we need to be careful about what we're talking about when we do that. And so the question is, is, Do you have -- are your guidelines going to address the matter of "How does one assess uncertainty?"

DR. WITSCHI: Well, this really would mean the uncertainty is -- I'm not sure I agree with Stan, but we religiously have done this. We've done it in this way, that we said: Okay. The unit cancer is so-and-so much or the risk is so-and-so much because it

is zero. I think uncertainty is addressed in the report, which was one or two committee members helping, by the way, is much more that you, instead of plunking down a number, which might be so much, or it might be zero, you give some thought; and then in the case of benzo[a]pyrene, for example, you could say, look, all we have are mouse bioassays or something like that. You complement your numerical calculations with some narrative or the data base.

DR. ALEXEEFF: That could be done.

DR. FROINES: I agree and disagree with you, because some uncertainty analysis is going to be in a lot of Monte Carlo simulations, and we're going to spend endless hours of mathematical calculations. That's what some people would like is a lot of quantitative clarification.

Then the Bayesians will come along and say, "Well, we need some value of information work, and we need to look at it from a Bayesian standpoint."

So I just think that we -- it's fine to say, well, we just want to include some narrative, or we want to include Monte Carlo simulations, or look at it from a Bayesian statistical standpoint, or whatever, but the point is, it's not trivial when you start asking for uncertainty. And the question is, What does it mean?

DR. GLANTZ: Yes, but we've said in other reports: We have a lot of confidence in this value, or this is really -- this is the best we could do, but you know, don't write home about it. I mean, that's -- we've taken those positions in various things that we've written. So I think we have been doing the best we could to deal with the uncertainty issue.

DR. FROINES: But let's continue with Hans, because I think that his point is well taken insofar as he has said basically that the mouse bioassay was -- correct me if I misstate it -- was at least -- had questions of its adequacy. One could say --

DR. WITSCHI: Yes.

DR. FROINES: One could say inadequate. And then the question comes, is, Should it be used as a basis of the risk assessment? And I think George and --

DR. WITSCHI: I have two very specific points. One is --

DR. FROINES: But you need them to add --

DR. WITSCHI: -- enormous range of animals -- you know, from evening mice to six-months old mice. Particularly transparent (questionable translation), we know that young animals react differently.

And the other one is the histopathology was

not rigorous. I mean, you cannot get away with looking at lumps.

DR. ALEXEEFF: Well, the actual risk assessment is based on the hamster study. We presented the Neal Rigdon because that is what some other organizations focus on.

DR. WITSCHI: That's the study from Germany; right?

DR. ALEXEEFF: That's the one.

DR. WITSCHI: That's not Pauluhn. It's the Mohr --

DR. COLLINS: Thyssen.

DR. WITSCHI: Thyssen. That's right. The problem is that study, of course -- first of all, what -- we know the hamsters don't get lung tumors, you know. They get them in the larynx, they get them in the pharynx, they get them in the trachea. They never get lung tumors.

But the other one that now studies only animal groups is Thyssen, but nothing to write home about. It's 24 per group per dose, and only three doses out of only two data responses. So again, it's a -- it's a weak basis.

DR. ALEXEEFF: Right. I agree.

DR. WITSCHI: I would also like to go onto

the record that I agree with John. You know, that it's carrying it to such a degree that it's probably an exercise in futility, that people would much rather worry about what's out there in the real world, and these are the particles. I really think that's the real issue.

DR. FROINES: I think it's currently in your court.

DR. ALEXEEFF: Well, I'm not sure how to address that question.

DR. GLANTZ: Well, I mean, are we saying --

DR. ALEXEEFF: The charge we have, according to the way the law states, is even in the face of uncertainty, we are required to come up with something. Okay? We have to do the best job we can, based upon what it is. So that's where we are.

DR. WITSCHI: I did not really mean to tear this document apart, to tell you the truth. It may have sounded this way. I really --

DR. GLANTZ: I'd hate to see what it sounded like if you didn't like it.

(General laughter.)

DR. WITSCHI: I really wanted to bring up some of the problems which are inherent in scholastic

risk assessment, and to my -- in my feeling, the biology is lost, and we just should not get carried away by having computer programs and some instances where things have been successful.

That was the point I wanted to make. I'm probably going to give a lecture on that one.

DR. BYUS: Well, I think it's clear that it is an animal carcinogen --

DR. WITSCHI: Oh, yes.

DR. BYUS: -- as opposed to some chemicals which we've studied where it isn't clear that it's an animal carcinogen. I mean, it's clear. This is a very clear case of an animal carcinogen, whereas the human data is still minimal.

The problem is in the quantitative aspect of the risk assessment as was based on the animal models. That's where the problem is. Not that it isn't a carcinogen -- it is clearly a carcinogen, by whatever other criteria you want -- it's just that when you get to extrapolating doses to get it quantitative.

DR. FROINES: Well, maybe the suggestion, then, though, is that you all should pursue this after this meeting and work out some reasonable language that addresses those concerns.

DR. ALEXEEFF: Yes.

DR. WITSCHI: Or as far as I am concerned, you take out the one about the interactions in here. That doesn't take anything away from the report. And I would be happy if you just -- some acknowledgment that you didn't have any choice but really to rely on a study which had some serious flaws. That's --

DR. ALEXEEFF: We have.

DR. WITSCHI: I would like you, if you can, to discuss the human epi to some extent, because see, I think that's where we are going to know more about benzo[a]pyrene. Particularly now we know those populations. We have already identified populations at risk. And the use of adducts (questionable translation) -- you know, that's the molecular epidemiology that is heading right now.

DR. ALEXEEFF: We have a paragraph in the Part B summary where we refer to some of the uncertainties, and we can add to that comments about the data quality of these studies.

DR. WITSCHI: Yes.

DR. ALEXEEFF: And we can also suggest wording for the findings.

DR. WITSCHI: Yes. Sure.

DR. SEIBER: Shouldn't it be in the Executive Summary too?

DR. ALEXEEFF: And in the Executive Summary.

DR. PITTS: Absolutely, it should be in the Executive Summary -- almost the way you stated it too.

DR. GLANTZ: I have a few comments. Should I defer?

DR. FROINES: I was just going to follow up and say that it wouldn't be a bad idea also to put in some of the references on -- I can never pronounce the name --

DR. WITSCHI: Hemminki.

DR. FROINES: -- Hemminki and Perera and others who have been doing some of the P32 postlabeling in human subjects in the last couple of years. Because I just went back and looked at the dates, the references, and you're right, it ends in '88, and there is some more recent data.

DR. BYUS: I've just been reviewing grants for people constantly summarizing all of this new data with the adduct formation and benzo[a]pyrene. There's a lot of data that's come out in the last five years in terms of supporting molecular mechanisms of benzo[a]pyrene and the formation and certain -- as I said, certain genes being involved, and the point of

view, it's much more convincing, even as you have it here now.

DR. ALEXEEFF: Okay.

DR. WITSCHI: And if you want to have fun, look at the beluga whales in the St. Lawrence River.

DR. ALEXEEFF: Beluga whales?

DR. WITSCHI: Beluga whales in the St. Lawrence River. They have an undue high incidence of liver cancer, downstream of the Saguenay, and it's probably thought to be some polycyclics which are dumped somewhere upstream into the water.

DR. COLLINS: We have a hard time getting out-of-state travel, so if you could suggest that to management, we would be glad to look at that.

DR. ALEXEEFF: Beluga.

DR. WITSCHI: Beluga. Those are those --

DR. SEIBER: Not very big.

DR. WITSCHI: Well, as far as whales go, yes. White whales, yes. They have the white color and they live in the St. Lawrence, and the Saguenay goes into the St. Lawrence. They have found an undue high incidence -- hmm?

DR. FROINES: Is that published?

DR. WITSCHI: Gee, I wouldn't know. The

guy who did some work on that one was named Shugert, from Oakridge. I don't know that it has been published.

DR. GLANTZ: Well, I have -- just to further add to the confusion -- I actually have a couple of small points and then a couple of big points to add to the confusion.

First of all, on page 3-14 you say "In male Swiss mice" -- down at the very bottom -- "In male Swiss mice binding of BaP metabolites to DNA is linearly related (on a log-log scale) to orally administered BaP." And what you should say is that it's related by a power log, and then in parenthesis say linearly on a log-log scale. I'm being picky.

On page -- okay. One thing -- I just got a little -- on page 7-2 you're talking about -- at the top part you're talking about feeding studies, and one thing I just found confusing was some of what you're talking about is on orally administered and sometimes you're talking about inhalation studies, and you're relating this to ambient exposures and breathing it in. And I just got a little -- I was a little troubled that you're using potency estimates that you get from feeding people -- not people -- feeding whatever this was -- mice or whatever it was -- to -- versus inhalation

studies. And I just thought that needed to be better justified. I mean, are you just using that to argue that it's a carcinogen? But -- and that the mode of administration doesn't matter, or what? I mean, it -- there needs to be some justification for the relevance of that.

DR. ALEXEEFF: Okay.

DR. GLANTZ: And then on page 7-5 you talk about, when you're doing the fits with the GLOBAL86 model, you say the goodness of fit was selected so that you got a P value greater than .01, and I'm sure that's an error.

DR. ALEXEEFF: We'll indicate what the P value is.

DR. GLANTZ: If you're talking about it being not significant, maybe that it was .1 or something.

DR. ALEXEEFF: Okay.

DR. GLANTZ: But -- then the other thing I was troubled with, at the bottom of that page, is you're talking about -- and Jim had mentioned this in his presentation, that sometimes you didn't use the GLOBAL86, the multistage model, because it didn't fit for these high doses or low doses. And then you said, "So we're not going to use that data." But it seems to

me that if the model didn't fit the data, that you should throw the model out, not the data out.

(General laughter.)

So I was troubled by that. That, you know, if it doesn't work, that suggests to me there's something wrong with the theory. So you either really need to make a good case that there was something wrong with the data such that you should -- that the data shouldn't be considered, or you should adjust the model appropriately. So I was bothered by that.

And the same thing comes up again on page 7-9 on the last paragraph. Since you're going to have to go back and think about these things, I'll just put them on the record.

Then the other thing that I got all confused by, on page 7-17, in Table 6, you have a whole bunch of different estimates where you're comparing the different cancer estimates from different models, and it wasn't clear to me why you ended up using the ones that you did.

DR. FROINES: We're taking that table out.

DR. GLANTZ: Oh, we are? Okay. Good.

DR. FROINES: That's moot.

DR. GLANTZ: Okay. Then it's moot.

DR. PITTS: That clarifies that.

DR. GLANTZ: That clarifies it. I was very confused by that. Okay.

Then the last thing -- so those are all kinds of things you need to clarify. The last thing which I mentioned in the note I sent in was I think you need to talk about heart disease.

DR. FROINES: We have a reemergence of a panel member.

DR. GLANTZ: Oh, okay. You missed your plane?

DR. FRIEDMAN: No, it was canceled.

DR. PITTS: Really? I'm glad you're here for this.

DR. GLANTZ: There's a moderate amount of evidence out there that polycylic aromatic hydrocarbons in general, benzo[a]pyrene in particular, facilitate atherosclerosis, and I really think that needs to be dealt with in this report.

And the -- I think that -- I mean, historically, people always worry about cancer when they talk about air pollution, and I think this is an area where they're -- I mean, there's not been a whole lot of research done on heart disease and environmental toxins, but there's some out there.

And in the paper we did on ETS and heart disease, we got into the whole issue of polycyclic aromatic hydrocarbons, and I think that that's something that needs to be addressed.

There's a moderate amount of animal data out there, and what seems to happen is that the -- these -- the PAHs seem to bind to LDL cholesterol and facilitate the incorporation of LDL cholesterol into the cell wall in the endo- -- or the epo- -- endo, epo -- I always get mixed up -- but it's the lining of the wall, the arterial walls. And in fact, the whole atherosclerotic process seems -- there seems to be a role of hyperplasia and sort of quasi-carcinogenic processes going on. And this is the first compound that we've come across where there seems to be some clear evidence that that's a potentially important factor. And given the tremendous prevalence of heart disease, I really think that's something that needs to be addressed in the report.

And when I -- when I talked to Jim about this on the phone a couple of weeks ago, this was met with high levels of anxiety, and I told him if this was the only objection that anyone had to the report, I wouldn't bring it up; but somehow he didn't think that would be the case. So I think that you need to address it in the report. Now, how well you can be quantitative about it,

I don't know. I mean, but I think there's enough data out there that it warrants a thorough discussion in the report, and the -- and it may be acting as a facilitator or something analogous to a procarcinogen when you were talking about carcinogenesis.

But I think that the public health impact could be significant, and so I -- I -- since you're going to need to go back and do some more work on the report, this is an important area that I think you ought to develop. And I have given the staff some references and the names of a couple of the people.

And to thoroughly confuse you, most of the animal studies are done with chickens and pigeons, and things like that, rather than with rats. So we will have a whole new dimension of interspecies extrapolation to worry about. But I think it's at least worth seriously addressing, and I think it probably ought to be reflected in the Executive Summary and the findings.

Now, I don't -- I don't know how quantitative you're going to be able to be in terms of overall risk, but based on listening to what Dr. Witschi said, I think the data is at least as strong as the hamster studies that were used for carcinogenesis, because the results are quite consistent in terms of these animal studies, looking at PAHs and lipid deposits in arteries.

DR. WITSCHI: That's mostly the studies of Art Penn; right?

DR. GLANTZ: Yes.

DR. WITSCHI: Penn, P-e-n-n.

DR. GLANTZ: Yes. Yes. But we've done -- we have a couple of studies that we've done looking at past smoking and been able to show that you can -- by secondhand smoke exposure, you can greatly accelerate atherosclerosis -- or lipid deposits -- really not arthrosclerosis -- in mammals. And I'll give you these things.

We have another paper coming out that's already shown that that's not a catecholamine effect with the rabbits in the cage being unhappy that they're breathing secondhand smoke. So it's some other constituent of the tobacco smoke. And Arthur Penn's stuff really strongly implicates the PAHs.

So that's my big comment on the report, in addition to those other smaller points.

DR. FROINES: We'd better ask Tom Mack if in his twin study he addressed issues like that. That would be interesting.

DR. PITTS: Are we --

DR. FROINES: I think we're done.

DR. PITTS: Okay.

DR. GLANTZ: Did we have a big enough assignment?

DR. FROINES: I think that the assignment arises primarily from you and Dr. Witschi, unless I'm missing something. And we also agree to take out Table 7.6, take out the Section 5.3.4, to maybe add some things about more up-to-date biomarker data. But the fundamental concerns are the two raised by the two of you. So I think that is it.

DR. PITTS: Okay. Fine.

DR. GLANTZ: Do you think that it would be possible -- we're going to meet again in April -- the 15th. Can we just finish -- I mean, I think other than these couple of big mudballs I lobbed, I mean, I think the document is basically pretty good. But would it be -- can they, then, bring it back to our next meeting, and hopefully we'll finalize it then? I mean, I can talk to you guys on the phone in the meantime.

DR. ALEXEEFF: We will try. We'll do the calculation of timing and that kind of thing, so we'll have to have at least some --

UNIDENTIFIED SPEAKER: Do we have a public comment period at this point?

UNIDENTIFIED SPEAKER: Actually, I don't know if we do or not.

MR. LOCKETT: It's not clear. We'll think about it.

MS. SHIROMA: It depends on -- on how you address --

DR. ALEXEEFF: See, I guess it's complicated based upon the earlier discussion, although I don't want to get into it, but the fact is that once the panel finishes with this compound, it doesn't go to the Air Board.

DR. PITTS: Excuse me. I couldn't hear that.

DR. ALEXEEFF: Excuse me?

DR. PITTS: I couldn't hear it.

DR. ALEXEEFF: It's a little bit complicated because once the panel finishes with this compound, it doesn't go to the Air Board. So this new information, we probably should have -- you know, we have to think about making sure that there was some opportunity for somebody to say something about this. I don't know if this -- that will be the only issue.

DR. GLANTZ: Well, to me, having adequate -- an adequate opportunity for the public to comment on these new things, if that's appropriate, I would hope that -- we're meeting in April, which is two months away -- February, March -- yes, about two months

away, and I would hope that -- isn't it the middle of April?

DR. PITTS: I thought we had a meeting March 22nd --

UNIDENTIFIED SPEAKER: I did too.

DR. PITTS: -- at the San Francisco Holiday Inn.

DR. GLANTZ: Oh, March 22.

DR. PITTS: March 22. So that would only be a month.

MR. LOCKETT: My understanding, Mr. Chairman, of the panel is that, based on the prior discussion, we were going to meet next in Sacramento, and the date is March 22, providing we have items on the agenda for it. And then the next meeting after that is April 18, back in Southern California.

DR. PITTS: Okay. So March 22. Okay. I blew that one, then. It will be in Sacramento on the 22nd of March.

MR. LOCKETT: Providing we have agenda items, but I haven't heard --

DR. PITTS: We have one right now, haven't we? BaP.

MR. LOCKETT: I haven't heard from OEHHA whether they would be ready to meet in March if we don't

have another comment period.

DR. FROINES: Lead is not going to be ready until the 22nd?

MR. LOCKETT: No, that's April.

DR. PITTS: How would you feel, the staff feel? It's fairly complex, actually. And would it be more suitable to have perhaps both the lead and BaP revisited and the finals on those, say, in April? It seems to me the issues are too important.

DR. ALEXEEFF: I think, just from a practical standpoint, that would make the most sense.

DR. PITTS: It would seem to make sense. It's really a very interesting -- science has come up today and a lot of -- it's good stuff, and we really ought to have both sides, Part A and B. And I'm more than happy, and Stan and John, we'll work with the staff --

DR. GLANTZ: When I had said the next meeting, I thought the next meeting was in April.

DR. PITTS: April, sure.

DR. GLANTZ: So what I would suggest is that you bring the BaP document back in April after -- and if you deem it's appropriate to have more public comment between now and then, I think that would give you time to do that.

DR. PITTS: All right.

DR. GLANTZ: I don't think we're pointing to fundamental major flaws in the document. I think we're pointing to some things you need to be -- the hardest thing is to be adding the heart disease stuff.

DR. PITTS: Genevieve, is that acceptable to you on Part A?

MS. SHIROMA: Yes, that's fine.

DR. PITTS: And we'll meet in March. We would agree, then, that with -- certainly the Executive Summary and the draft findings would reflect the substance of these discussions and that there will be some work on it.

DR. ALEXEEFF: Should we just work with Dr. Glantz on making it -- there will have to be some decision made as to whether or not -- how quantitative one can get. We could possibly develop a reference exposure level. I'm not sure. The question is --

DR. GLANTZ: I would like you to be as quantitative as you can be, based on the data that's available -- and the time. I mean, I don't want to hold up completing this report.

DR. ALEXEEFF: Yes.

DR. GLANTZ: But I -- my extension of the date, and especially after listening to earlier

discussion, I think you could probably monitor it. I think it would be possible to come up with some kind of estimate. Maybe we can get together and talk about that later on. I would like you to try to do that, and I don't want to hold the document up if you can't.

DR. PITTS: I think also when you look at this now in terms of discussion today, complex mixture, how IARC treats diesel and gasoline and exhaust, basically in one document, that you want to think of the -- both Part A and B in terms of the fact that this is -- if not a precursor, certainly a one-two punch with the diesel exhaust, and think of it in terms of bringing in the nitropolycyclics and bringing in the complex mixtures, and you'll have chances to make those calculations with the other PAHs that we were talking about. That is, the exposure as contrasted -- taking it in the context of exposure with concentrations. So that -- it's really an important document. The two really do have a very close match, and you can review it in that light. That is somewhat more extensive than the focus, basically, like on this one, practically specifically just BaP.

Okay. Well, then --

DR. GLANTZ: Can I bring up a point?

DR. PITTS: Yes. Certainly.

DR. GLANTZ: Another thing, I've been kind of frustrated -- are we all done with BaP?

DR. PITTS: Well, I'd like a motion, then. Do you want to make a motion as to how we --

DR. GLANTZ: I move that we ask the staff to -- that we defer action on BaP and act -- until the April meeting -- and that we ask the staff to bring back a document that would incorporate the suggestions made at this meeting, and hopefully we can approve at that point.

DR. PITTS: Second? Is that a motion?

DR. SEIBER: Second.

DR. PITTS: Discussion? All those in favor?

(All panel members raised their hand.)

DR. PITTS: Opposed?

(None.)

DR. FROINES: At the next meeting when we take up this, can we go also and talk about the suggestions that Jim made first -- and I certainly agree with to some extent -- on making a recommendation to the ARB about both research and monitoring priorities? Because it seems to me, as Hans was saying earlier -- he made a joke about we've known about benzo[a]pyrene and PAHs since, you know, chimney sweeps -- and I won't

repeat the joke, for the sake of the room -- but those of you who want to know about it should see the colleague from Davis.

But then you look at -- you look up at the overhead that George presented on what EPA has done on PAHs, knowing about these things as carcinogens for about 2- or 300 years, and seeing how little EPA has moved, and it's embarrassing when you think about it. It's really terrible. And that at some level we ought to be talking about, What kinds of information do we need to do a better job on polycyclic organic matter? And so I would argue that maybe we should have a short discussion -- a very short discussion -- clearly, that could be -- become a three-day symposium -- and I don't know whether Bob Phalen's conference last month dealt with these issues in terms of recommendations.

Did you attend?

DR. PITTS: I attended.

DR. FROINES: You did. The recommendations and what went on?

DR. PITTS: Oh, yes, the whole conference. We were handed out a form, to fill them out -- What recommendations do you have?

DR. FROINES: Because we had the recommendations from the HEI panel as well.

DR. PITTS: There's a whole series of recommendations that came out of that -- that colloquium.

DR. FROINES: But that dealt primarily with mortality.

DR. PITTS: That was basically the document -- Schwartz doctorie (phonetic) approach.

DR. FROINES: So it's nonrelating.

DR. PITTS: Well, there was actually -- as a matter of fact, they did have a number in there for cancer also.

DR. FROINES: Was there? Really?

DR. PITTS: And the real question of the conference came out -- basically what they said was basically there's a 1.1 percent increase in mortality, overall mortality, per 10 micrograms per cubic meter of PM 10.

DR. FRIEDMAN: Did you mean 1.1 fold increase, from what you told me?

DR. PITTS: 1.1 fold.

DR. FRIEDMAN: You just said percent. I just wanted to make sure that --

DR. PITTS: Well, no. The number is 1.1 percent per 10 micrograms. So if you went up to 20, it would be a 2.2 percent increase in the total

mortality.

DR. FRIEDMAN: As a percentage of the mortality rate.

DR. PITTS: The total mortality. And then they had that for cardiovascular, and they had it for lung problems. And it's a tremendous amount. I mean, if you take this and relate it to PM 10, at 10 micrograms per cubic meter, and you work your way up, it winds up that if they're correct, this is a -- it's a very, very large percentage of mortality in this country is due to PM 10.

Then there was the opposite side presented. It was a good colloquium, because there were both sides of the issue.

But one of the questions was, in answer to John -- one of the key questions was, you tell it -- Rochester -- yes -- he turned the session, Well, what are the biochemical triggers? That's what was fascinating to me. What are the biochemical triggers that could trigger an epidemiologically implied response of this magnitude?

DR. FROINES: Well, I have a question about that. Is the risk from malignant respiratory disease, lung cancer, greater when you take PM 10 as a totality or is nonmalignant disease the greater

problem? And that goes back to this whole problem with dealing with BaP as a single chemical. What we have, nonmalignant respiratory disease theoretically killing thousands of people, and yet we're looking at this benzo[a]pyrene lung cancer issue. It seems like it's -- there's a lot of uncertainties that we're talking about.

DR. WITSCHI: That's kind of funny. I was in -- about 15 years ago -- in the Diesel Committee of the Academy, and together with Steven Horvath and myself and -- you remember that one?

DR. PITTS: Sure.

DR. WITSCHI: There was three of us that said the lung cancer disease is going to be much more important, and we were laughed off the committee, more or less, and never talked to anything.

DR. GLANTZ: That's why I want to talk about heart disease.

DR. WITSCHI: You remember that one too?

DR. PITTS: I sure do. That's right.

DR. GLANTZ: Could I say one other thing?

DR. PITTS: Yes.

DR. GLANTZ: One other thing I'd like to see on the agenda for a meeting -- can I change the subject slightly?

DR. PITTS: Sure.

DR. GLANTZ: This is the ETS report. It's too bad that Dr. Becker had to leave, but this has been dragging on for quite a long time, and it's been months and months, several months ago, the -- I know that the OEHHA gave Becker drafts of, I believe, three chapters, which just should have gone out for public comment by now. And I would hope April, being two months from now, that at least the rest -- or the reproductive effects, the exposure assessment, the noncancer pul-lung effects, the lung cancer -- at least those documents would have gone out to public comment, and we will be able to at least talk about them at the next meeting. And it would be nice if the heart disease chapter also was out, because they seem to have really become gummed up in the process. And these are important documents.

I don't know that we would be in a position to act on them at the April meeting, but I think -- I would hope they would be out, and I would hope we could get them -- at least some discussion of them onto the agenda for this meeting.

The Chair being good at extracting things from the bureaucracy, I would hope he would use his considerable powers of persuasion to get them pried loose. I don't think there's a conspiracy or anything.

I just think it's time.

DR. PITTS: Okay.

DR. GLANTZ: So if we could get that on the agenda too. It will be a good meeting. We have lead people and the tobacco industry --

DR. PITTS: Along that line, Bruce, you might bring that up. I should just mention also, as another item that we won't go into detail on, but we have been working with Jim Wells and his crew on examining metal parathion -- Craig and myself and Bruce and Bill. We have been working with them, and actually in some detail, going over the actual draft report that they prepared. And we had a meeting actually at the Beckman Center, a very fruitful meeting, and basically we have a set of questions and ideas that we've transmitted or are going to be transmitting that came out of this meeting, that we'll be transmitting back to Jim very shortly. And then at that time in the April meeting, I think on the agenda we can certainly indicate where we are. He's anxious to get a report out -- Mr. Wells is -- and --

DR. GLANTZ: You mean we'll deal with the pesticides before I'm a grandfather? That would be remarkable.

DR. PITTS: Well, I found, at least from

my interaction with him, he is interested in moving forward in this area. And I think he's sincerely interested, and not only moving forward, but he's got some good points on the science, some studies, for example, with the parathion in Ventura versus in the Valley -- and very interesting rates of formation of paraoxon in those things that they found, and (incomprehensible) oxidation. So I was just impressed with the fact that he was on target, and then knew the science as well as his -- so I think it's an optimistic look, and we will certainly continue working with him. And we'll get back to you at that April meeting on the status, if you'll put that on the agenda. That's a very positive response from he and his staff.

DR. FROINES: When does Carol Henry leave?

DR. ALEXEEFF: March 4th.

DR. FROINES: When?

DR. ALEXEEFF: March 4.

DR. FROINES: Will there be an accounting -- does George have a boss as of March 4th?

DR. ALEXEEFF: Yes. There's a chief deputy director who would be acting --

DR. WITSCHI: What happened to Carol?

DR. ALEXEEFF: Jim Stratman.

UNIDENTIFIED SPEAKER: Oh, he's a good guy.

DR. ALEXEEFF: Carol Henry has announced that she's leaving the state service and is going to work for the Department of Energy, U.S. Department of Energy.

DR. PITTS: Where is she going?

DR. ALEXEEFF: Where is -- for personal reasons. U.S. Department of Energy.

DR. WITSCHI: That's a big mess.

DR. GLANTZ: She wants to shorten the commute.

DR. ALEXEEFF: That is the reason.

DR. PITTS: Are there any other -- are there any other items for discussion?

Yes, Mr. Lockett?

MR. LOCKETT: Is there any feedback from the panel today on the proposed findings for BaP? And if not, there will be feedback between now and --

DR. PITTS: Oh, I expect there to be a great deal -- I hope there will be beaucoup feedback from the staff and the various interested parties across the table here, and we'll have a new set generated at that time.

Any other questions?

DR. SEIBER: No meeting in March?

DR. PITTS: No meeting in March. The ides of March are --

DR. GLANTZ: Should the April meeting be in Sacramento, then?

MR. LOCKETT: If the panel would like to do it, we'll try to move it to Sacramento. The fog is better.

DR. PITTS: You'll fall back one, then? Is that what we're saying?

MR. LOCKETT: I'm sorry?

DR. PITTS: We'll move them back one now, then. That is, the Sacramento meeting in March will now be -- it could be in April, right, down here? Is that what we're saying?

MR. LOCKETT: Correct.

DR. PITTS: Yes, I think that's -- so that in April, the item -- those tule fogs are less probable -- much less probable. So let's revise -- and could we have just a --

DR. GLANTZ: What's the date?

DR. DENTON: The 18th.

DR. PITTS: Bruce, could you produce for us a revised timetable? Just have them get it to the faculty and to the members of the panel, will you? So

skip March. I already slipped the time. We'll be meeting -- our alternate will then be in Sacramento, and then the following one then -- I don't know what that is --

MR. OULREY: We haven't gotten that far yet. We're only up to April.

DR. PITTS: Well, fine. But I think that would be helpful to have that sent to us, just a revised schedule.

DR. FROINES: Since ARB was a sponsor of the Bob Phalen's meeting in Irvine, can we get a copy of their findings or whatever they put out?

DR. PITTS: Let me suggest what would be really useful on that for all the panel members. I came away really impressed by it. And -- just a moment -- they -- Bob had prepared, and the ARB staff, John Holmes and his crew, Phalen and his crew -- they did a great job on this -- all aspects of this colloquium -- and in advance they have a loose-leaf binder -- and Bruce, this is what we're going to want to get to the panel -- a loose-leaf binder that had abstracts of all the talks, and then it had abstracts of all the poster sessions. And it is fascinating reading, and I think that the panel members certainly could profit greatly from going through that, as well as I would suggest any ARB staff

or ARB staff that weren't at the meeting. Some of you were there on both staffs. It was really an interesting meeting.

Could you do that, then, for us? I think that would be a real bonus for all of us. That will be published, by the way. They're shooting for December to have the whole thing published, along with the research suggestions and so forth. But just the basic loose-leaf binder that has all of these abstracts in it is very much worthwhile.

All right. Do I hear a motion to adjourn?

DR. GLANTZ: I so move.

DR. PITTS: Second?

DR. SEIBER: Second?

DR. PITTS: All in favor?

Thanks very much to the staff on both sides there, and the panel.

(The hearing was concluded at 2:15 p.m.)

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R E P O R T E R ' S C E R T I F I C A T E

I, JOANNE P. CUNNINGHAM, a certified shorthand reporter, do hereby certify that the foregoing pages comprise a full, true and correct transcription of the proceedings had and the testimony taken at the hearing in the hereinbefore-entitled matter.

Dated this 24th day of February, 1994, at Riverside, California.

Joanne P. Cunningham

JOANNE P. CUNNINGHAM, CSR No. 2734